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NEW YORK
ZOOLOGICAL SOCIETY

1895



1947

FIFTY-SECOND
ANNUAL REPORT
FOR THE YEAR 1947

THE NEW YORK ZOOLOGICAL SOCIETY

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30 East 40th Street, New York 16, N. Y.

THE ZOOLOGICAL PARK

Bronx Park, New York 60, N. Y.

MEMBERSHIP IN THE NEW YORK ZOOLOGICAL SOCIETY

THE NEW YORK ZOOLOGICAL SOCIETY was founded in 1895 for the "instruction and recreation of the people" through the establishment of a Zoological Park, for the promotion of zoology through exhibition of collections, publication, research and exploration, and for the conservation of animal life of the world. Since 1899 the Zoological Society has directed the New York Zoological Park and in 1902 it was entrusted with the management of the New York Aquarium.

Membership is actively invited of all persons who are interested in the objects of the Society and desire to contribute toward its support.

Annual Membership is \$10. Contributing Membership is \$25. These Memberships entitle the holders to Member's cards and 10 guest tickets of admission to the Zoological Park on pay days; a copy of the Annual Report; a subscription to ANIMAL KINGDOM, the bi-monthly publication of the Society; privileges of the Library and Members' Lounge in the Administration Building and to attend all open meetings of the Society. Tickets to all sections of the Zoological Park for which an admission charge is made are available, free, to Members upon application at the Administration Building in person. Members will be taken on "behind the scenes" tours of the Zoological Park and Aquarium, without charge, on application, and are entitled to 20% discount on all publications of the Society. We are advised that Contributing Membership fees are deductible from income tax within the legal limits.

Annual or Contributing Members may become Life Members by the payment of \$200. See By-Laws. Other classes of membership are: Patron, \$1,000; Associate Founder, \$2,500; Founder, \$5,000; Founder in Perpetuity, \$10,000; Benefactor, \$25,000.

Applications for membership may be submitted to any officer of the Society or to the Society's general office at 30 East 40th Street, New York 16, N. Y.

FORM OF BEQUEST

I do hereby give and bequeath to the "New York Zoological Society," of the City of New York.....
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.....

REPORT OF THE PRESIDENT

AS THE YEAR 1947 departed one of our leading newspapers, in an editorial review, stated that "years are like people: there is so much good in the worst of them and so much bad in the best of them." This observation is scarcely applicable to the past year of the Society. It has indeed been one of the best years, and virtually free of disappointment, misfortune, set-backs or other forms of *badness*. Good progress has been made in all the spheres of work to which our institution is dedicated.

Detailed reports regarding the various areas of the Society's work will be found in subsequent pages. As a consequence, this statement will merely touch upon some of the more significant events of the year.

Conservation

Unquestionably the most important new development was the establishment of a full-time staff whose energies could be devoted uninterruptedly to Conservation. This long-desired development was made possible largely because of the strengthening of the Society's financial position by the receipt of the magnificent bequest from the estate of the late Mrs. Frederick Ferris Thompson, a former Benefactor of the Society. It will be recalled that our policy in regard to Conservation has been liberalized in recent years so that today our efforts are directed not only towards the protection of animal life but also towards the conservation and proper use of the other related and interdependent resources of nature, namely, forests and other plant life, fertile soils and water sources. In effect we have come to realize that the problem, an increasingly urgent one, is that of conserving the *living environment* as a whole. Robbed of its natural environment animal life disappears; robbed of sufficient forest cover water sources diminish; robbed of adequate vegetative cover fertile soils are blown or washed away. In the center of the circle stands man, collectively our civilization, still the destroyer but potentially the conserver. From every point of view the cause embodied in the word *Conservation* must be supported with increas-

ing vigor. Our institution is developing its plans for sustained and, we trust, highly productive work in the years that lie ahead in two closely correlated fields of effort — fact-finding and research on the one hand, education and the dissemination of information on the other. There is no possible way of carrying out an effective program without far greater funds than the Society now possesses, and the help of our membership is earnestly hoped for.

Scientific Research

In the general field of biology and the more specific field of zoology, the frontiers of knowledge still lie over the horizon. No doubt they always will. This very fact produces a constant challenge to an institution such as ours, not only to sustain the tempo of its research work but, when opportunity offers, to extend it into new areas. The past year has provided several rich opportunities of which it has been possible to take advantage. Through the establishment of the Jackson Hole Wildlife Park in Wyoming, in whose development the Society is taking an extremely active part, a remarkable series of field studies were completed that are fully described on page 53. The fact that in its first year this new organization has accomplished so much encourages belief that the Jackson Hole enterprise is destined to become a center of field research of increasing importance as time passes.

At home four research fellowships were awarded for studies of animal behavior in the Zoological Park through the summer season, and it is expected that these will be renewed in the coming year. In this regard a thorough and discriminating survey has been prepared with the support of a grant from the Rockefeller Foundation, looking towards the eventual establishment of a long-term program in this field of inquiry at the Park. Another happening of note is the acceleration and expansion of the Society's work in genetics and melanoma tissues. This work contains potentialities of helping to solve the problem of cancer in human beings. Support for it in the amount of \$15,068 has been received from the National Cancer Institute, and an additional \$1,250 from the American Cancer Society. While the above are new developments during the year they have not in any way detracted from the vigorous prosecution of earlier established research activities including those of the Tropical Research Department of the Hospital Laboratory in the Zoological Park, and of the Aquarium staff.

Membership

For some time we have suspected that the membership of our institution could be largely increased if people were informed that they would be welcomed to membership and that their support was needed. This suspicion has been fully confirmed within the last two or three years and the present year has been remarkable in that the number of Annual memberships has increased by 64 percent, the grand total of all members standing at the year end at 3,651 individuals. Obviously the long-term future welfare of the Society depends not only upon the number of its members but the aid which they accord to its work. As each year passes it becomes more and more evident that the need for the Society's work is increasing. Our institution can only grow and develop with the support of a large number of people.

Zoological Park

It is unlikely that in any year since the Zoological Park was opened have a greater number of extraordinary rarities been added to its collections. The major triumph has been the debut in America of three duck-billed platypuses, an event that captured popular interest throughout the country. From a collector's point of view these animals were not more extraordinary than certain others that were received and which are referred to in the report on the Zoological Park. Any animals which are in the *first* class, meaning that they have never previously been exhibited, present a sharp challenge to the organization. Diet, temperament and habits of such animals are all unknown and the peculiarities of each individual or of each species must be understood and catered to. It is a great tribute to the extraordinary skill of the staff that such a high degree of success has been won in maintaining these new additions to our collections alive and in good health. It is unlikely, further, that the operational standards in every department at the Park have ever been at a higher level. Experiments in increasing the excellence of our service to the public are being constantly carried out and unreserved credit goes to the entire organization for the splendid results that are being accomplished.

Aquarium

Final plans for the New York Aquarium were completed during the year. These embody unique methods of exhibition and include

elements for the establishment of a marine biological laboratory. Negotiations for a contract between the Society and the City of New York for the construction and operation of the new Aquarium have been brought to their final stage, and it is expected that the contract will shortly be presented to the Board of Estimate of the City. When it is approved, the Society will endeavor to raise its one-half share of the total \$5,000,000. construction cost.

Trustees

Jay Downer unfortunately was forced to resign because of ill health; Dean Sage, Jr. withdrew because of the removal of his residence to Wyoming. They both will be greatly missed.

New trustees were elected in the persons of Peter Grimm and Percy Chubb II, who are most warmly welcomed to our Board.

Finances

It is highly satisfactory to be able to report that for the sixth consecutive year the Society's administrative and operating expenses are within its earned income. This is significant because it means that any gifts or legacies received by the Society can be devoted to creative purposes. It would be unfortunate, however, if this good record were to leave the impression that the Society is "well off," which is no more than a relative term. It can be truly said that our institution is far short of the funds that it needs and can effectively use for the proper development of the major spheres of its work.

During the year the Society received a large portion, amounting to \$1,715,910.62, of the legacy accruing to it from the Estate of Mary Clark Thompson. In addition, gifts, grants-in-aid, and bequests were received in the total amount of \$178,238.24. These most helpful additions to the financial resources of the Society are reported in detail on page 84 and profound gratitude goes to all who have thus helped in supporting the Society's activities and contributed to its growth.

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The year has been favorable and auspicious. There are increasing evidences that our institution has a growing part to play in the life of our City, of our country and even of the world. Our entire organization deserves unbounded credit for the work that is being done. It is dedicated ardently to meet the opportunities that lie ahead.

THE ZOOLOGICAL PARK

JOHN TEE-VAN, *Executive Secretary*

THE SMOOTH FUNCTIONING of an institution that served 2,632,221 people during 1947 and which, on May 9th of that year, clocked its 100,000,000th visitor, must be based upon the friendliest of human relationships. The desire to serve the public well and faithfully and to do it cheerfully and happily is implicit as the paramount guiding principle of the operation of such an organization, deeply instilled and continuously cultured in every single member of the organization.

Good service to our visitors is based upon the knowledge, training and information that each employee possesses, and without a keen appreciation on the part of every individual of all that is happening in the Society, the Park and the Aquarium, our functions and accomplishments do not attain their complete stature and the pride of our employees in what we have done, do and can do, is not nurtured to its proper level. Excellent services that have been thoughtfully and painstakingly developed at the Park easily can be vitiated by a careless word or thoughtless action which often traces back directly to lack of knowledge. Thus, the dissemination of information to our staff is of the greatest importance in adequate public servicing.

During the past year, as part of this public service pattern, special efforts have been made to keep every individual at the Park informed as to what is happening, not only in his own Department but especially in other departments and divisions. Principally this has been accomplished through the revitalized Park news organ, ZOOLOG, which now is issued to all employees regularly every two weeks — more often if necessary. This five to seven page mimeographed publication is produced by a group of Associate Editors representative of all departments, with the cooperation of a new staff member, Gordon Cuyler, Assistant to the Executive Secretary, one of whose primary responsibilities is to see that no minutia of information which should be disseminated about the Park or Society escapes the columns of ZOOLOG.

New animal accessions and where they are to be seen, special articles on subjects such as the Zoological Society's members — who and why they are and what we should do about and for them, the accomplishments of the Zoological Park Council in working out personnel and operating problems, comments of the Park's Safety Committee, profiles and special articles about Park employees and their activities, the achievements of the Park's soft-ball team in winning second place in the 1947 Manhattan Commercial League and, most recently, the activities of the Park's girls' bowling team, announcements about the Christmas Club, Hospital Plans, etc. — all these and countless other notices appear in *ZOOLOG*.

Special plans have been effected to provide information to temporary employees such as the waitresses at our summer restaurants, etc. Guided tours of the Park are given so that they may have an idea of where the major exhibits are and of what happens generally about the Park, in order that these employees can have insight into the importance of their own job in relation to the Park's service as a whole. This is in addition to training programs involving lectures, demonstrations and motion pictures showing the right way of performing some task such as waiting on a table or making a sandwich.

In 1947 the Society was again fortunate in international relationships, with Australia as the continent in the foreground. The acquisition of the three platypuses — a major event in the Zoological Park's history — brought us into close touch with many Australian officials, culminating with the presence of the Australian Ambassador to the United States, the Honorable Norman J. Makin, at the dedication of the Platypusary, and later by the visit of the Honorable Arthur A. Calwell, Minister for Information and Minister for Immigration, who came especially to see how the animals were behaving. Australian mammals and birds, ever welcome to our collections, have been presented to us by E. J. L. Hallstrom, Vice-President of the Taronga Zoological Park Trust, Sydney, Australia. The Belgian Congo's gift in 1946 of three African elephants has had further reflections, as arrangements were completed during the past year looking forward to two Zoological Society expeditions in the Congo in 1948, one for collecting and one for research. Exchange shipments have gone forth to European zoos; among our European visitors were Georges Bidault, Minister of Foreign Affairs of France, who spent an afternoon at the Park with Mme. Bidault and members of his staff; Dr. A. Urbain, Director of the Museum National d'Histoire Naturelle and Chairman of the Committee on Zoological Gardens — International

Council of Museums, and Dr. P. G. van Tienhoven, President, International Office for the Protection of Nature.

These occurrences are but small indications of the Zoological Park's preoccupation with the animals of the world and what they do, and of our desire to bring to our collections animal rarities of the world.

THE ANIMAL DEPARTMENTS

MAMMALS AND BIRDS

LEE S. CRANDALL, *General Curator*

Grace Davall, *Assistant to the General Curator*; August Schilling,
Head Keeper of Mammals; George Scott, *Head Keeper of Birds*

THE FORECAST for 1947, made in last year's report, was well borne out. Importations of animals, in general, were more numerous and of better quality than was the case in 1946, though still in no way approaching the volume of inter-war years. Prices remain very high and there is no present indication of immediate improvement. To counteract these conditions, we have taken the only possible step. This is the employment of Mr. Charles Cordier, the well-known collector, as a regular member of our staff. In this capacity, Mr. Cordier, assisted by Mrs. Cordier, has already completed a most successful collecting expedition to Costa Rica. The Cordiers left for the Belgian Congo on October 10, 1947, and we anticipate their return in the spring of 1948 with a collection of importance.

MAMMALS • Accessions by purchase, gift and collection totalled 110, a number slightly less than that of the previous year. This disparity was caused principally, by the filling of ranks depleted during the war and consequent careful selection of additions to the collection. Among these were several of outstanding importance.

On April 25, Mr. David Fleay arrived from Australia with the three now famous Duck-billed Platypuses, Cecil, Betty and Penelope. Shown in a specially designed Platypusary for one hour daily from April 29 to October 26, these engaging animals were viewed by 203,841 persons. On the latter date, the Platypuses were removed to the basement of the Large Bird House, where their travelling tanks had been installed. Our success in maintaining them through the summer lends support to our hope that we shall be able to return them to exhibition early in the spring of 1948. An earthworm breeding plant, set up in the basement of the Lion House and maintained by the Aquarium staff, is believed to be adequate for the supply of

1,200 worms required to feed the animals daily — in addition, of course, to large quantities of crayfish and egg custard.

On July 3, Mr. Edward Migdalski arrived with three Lesser Pandas, which had been purchased for us in Calcutta by Dr. Dillon Ripley. These attractive reddish, raccoon-like animals filled a long-felt want and were placed at once in a moated enclosure near the Small Mammal House, previously occupied by Raccoons. The Pandas caused us ceaseless worry during the hot days of summer but responded most satisfactorily to the cooler days of autumn.

Four cow Elk and a fine young bull, selected for us in Jackson Hole by Mr. James Simon, Director of Jackson Hole Wildlife Park, were safely transported and were liberated in the Elk Range at the Zoological Park on February 23. With the addition of three fine calves born in June and July, we are again justified in pointing with pride to our Elk herd.

We were barely able to complete the settling of our new Elk before the arrival of a superb bull Moose. This animal, born and orphaned in the spring of 1945, was hand-reared at Maine's Swan Island and presented to us by Commissioner George J. Stobie.

Early in May, we received a notable Australian collection purchased from Taronga Zoological Park, Sydney, and transported with success by Captain Carl Von Hoffman. Included were two Red Kangaroos, two Tasmanian Devils, two Wombats and two Gray Phalangers.

On July 9, Lieutenant Charles Wharton, a veteran who had received his discharge in the Philippines, arrived with a remarkable collection from those islands. Among the mammals were Tarsiers, Tree Shrews, Bushy-tailed and Cuming's Giant Rats — all, as far as we know, entirely new to zoo collections.

The return from Costa Rica on August 31 of the first official expedition of the Cordiers, produced a representative collection of mammals. Most important was a female Water Opossum or Yapock, one of America's least known species and not previously exhibited alive.

More than the average number of mammals were born during the year and in spite of unusually cold weather prevailing during the spring months, a gratifying percentage of these young animals were living on December 31. Births totalled 87, the 68 survivors being distributed as follows: 1 Gray Phalanger, 1 White-cheeked Mangle, 1 Rhesus Monkey, 1 Sea Lion, 1 Mountain Viscacha, 4 Patagonian Cavies, 7 Raccoons, 1 Dybowski Deer, 1 Barasingha Deer,

1 Fallow Deer, 2 Axis Deer, 4 Sika Deer, 6 Red Deer, 3 Elk, 5 White-tailed Deer, 8 Muntjacs, 9 Black-bucks, 1 Nyala, 2 White-tailed Gnus, 1 Bushbuck, 2 Himalayan Tahrs, 3 Aoudads, 2 Guanacos and 1 Gayal.

The principal operational event of the year, at least as far as this department was concerned, was the opening of the reconditioned Small Mammal House on Members' Day, June 12. With darkened public space and glass-fronted cages, provided with fluorescent lighting, heat and forced ventilation, the small species shown there are now seen to the greatest possible advantage. And perhaps even more important, they can be seen but not smelled.

The northwestern section of the building, devoted to small cages for the more delicate and diminutive creatures, was completed and opened to the public on September 13. This portion of the exhibit, under the care of Mrs. Martini, has proved to be most attractive.

CENSUS OF THE MAMMAL DEPARTMENT December 31, 1947

<i>Orders</i>		<i>Species</i>	<i>Specimens</i>
Monotremata	Platypus and Echidnas	2	5
Marsupialia	Kangaroos, Opossums, etc.	14	32
Insectivora	Moles, Shrews and Hedgehogs.....	2	3
Chiroptera	Bats	2	3
Primates	Apes, Baboons and Monkeys.....	25	47
Edentata	Armadillos, Sloths and Anteaters.....	2	2
Lagomorpha	Rabbits and Hares.....	1	2
Rodentia	Squirrels, Marmots, Beavers, etc.	22	51
Carnivora	Cats, Dogs, Bears, etc.....	31	68
Pinnipedia	Sealions, Walruses, Seals.....	1	6
Proboscidea	Elephants	2	6
Perissodactyla	Rhinoceroses, Horses, Tapirs, etc.....	9	15
Artiodactyla	Hippopotamuses, Camels, Deer, Cattle, etc.	56	271
Totals		169	511

Summary: Orders, 13; Species, 169; Specimens, 511.

BIRDS • Arrivals of birds, as is usually the case, were far in excess of those of mammals. Not in many years past have we received such numbers of birds as came to us in 1947. This desirable result was substantially due to our own efforts, for while purchases amounted to 225 and gifts to 93, our staff collectors and travelling friends produced 314, making a total of 632. No less than 226 forms were involved, of which the following were new to our collections:

Gentoo Penguin, *Pygoscelis papua papua*
 Black-faced Ibis, *Theristicus melanoptis*
 Monkey-eating Eagle, *Pitheophaga jefferyi*

Guatemalan Crested Quail, *Colinus leucopogon incanus*
 White Eared Pheasant, *Crossoptilon crossoptilon crossoptilon*
 Imperial Pheasant, *Lophura imperialis*
 White-bellied Wood Rail, *Aramides cajanea albiventris*
 Snowy Plover, *Charadrius alexandrinus nivosus*
 Long-billed Curlew, *Numenius americanus americanus*
 Western Willet, *Catoptrophorus semipalmatus inornatus*
 American Avocet, *Recurvirostra americana*
 Lesser Road-runner, *Geococcyx velox pallidus*
 Gray-headed Pygmy Owl, *Glaucidium minutissimum griseiceps*
 Bang's Hermit, *Phaethornis guy coruscus*
 Guatemalan Hermit, *Phaethornis superciliosus longirostris*
 Dusky Hermit, *Phaethornis longuemareus saturatus*
 Salvin's Sickle-bill, *Eutoxeres aquila salvini*
 Jacobin Hummingbird, *Florisuga mellivora mellivora*
 Mexican Violet-ear, *Colibri thalassinus thalassinus*
 Slender-billed Mango, *Anthracothonax prevostii gracilirostris*
 Conver's Thorn-tail, *Popelairia conversii*
 Costa Rican Wood Nymph, *Thalurania furcata venusta*
 White-eared Hummingbird, *Hylocharis leucotis leucotis*
 White-bellied Emerald, *Amazilia candida candida*
 Cinnamomeus Hummingbird, *Amazilia rutila rutila*
 Black-bellied Hummingbird, *Eupherusa nigriventris*
 Guatemalan Cazique, *Lampornis amethystinus salvini*
 Green-throated Cazique, *Lampornis viridi-pallens viridi-pallens*
 White-bellied Mountain Gem, *Lampornis hemileucus*
 Garnet-throated Hummingbird, *Lamprolaima rhami rhami*
 Costa Rican Sun Glory, *Heliodoxa jacula henryi*
 Green-headed Hummingbird, *Eugenes fulgens viridiceps*
 Long-billed Star-throat, *Heliothraupis longirostris longirostris*
 Guatemalan Broad-tailed Hummingbird, *Selasphorus platycercus guatemalae*
 Massena Trogon, *Trogon massena massena*
 Elegant Trogon, *Trogon elegans elegans*
 Northern Violet Trogon, *Trogon violaceus braccatus*
 Van Rossem's Turquoise-browed Motmot, *Eumomota superciliosa vanrossemi*
 Chestnut-headed Motmot, *Momotus mexicanus castaneiceps*
 Costa Rican Nun Bird, *Monasa grandior*
 Salvin's Barbet, *Eubucco bourcierii salvini*
 Slater's Aracari Toucan, *Pteroglossus didymus*
 Blue-throated Green Toucanet,
 Aulacorhamphus caeruleogularis caeruleogularis
 Streak-chested Woodpecker, *Balanosphyra formicivora striatipectis*
 Santa Cruz Woodpecker, *Centurus aurifrons santacruzii*
 Cabot's Woodpecker, *Veniliornis oleaginus sanguinolentus*
 Northern Thin-billed Woodhewer, *Lepidocolaptes souleyetii insignis*
 Mexican Tityra, *Tityra semifasciata personata*
 Three-wattled Bell-bird, *Procnias tricarunculata*
 Cande's Manakin, *Manacus candei*
 Ridgway's Jay, *Cyanocitta stelleri ridgwayi*
 Costa Rican Magpie-jay, *Calocitta formosa pompata*
 Sikkim Red-headed Jay-thrush, *Garrulax erythrocephalus nigrimentus*
 Guatemalan Cactus Wren, *Heleodytes capistratus xerophilus*
 White-breasted Blue Mocking-thrush, *Melanotis hypoleucus*

Guatemalan Blue Solitaire, *Myadestes unicolor veraepacis*
 Guatemalan Brown Solitaire, *Myadestes obscurus oberholseri*
 Black-faced Solitaire, *Myadestes melanops*
 Rufous-collared Thrush, *Turdus rufitorques*
 Guatemalan Silky Flycatcher, *Ptilogonys cinereus molybdophanes*
 Costa Rican Silky Flycatcher, *Ptilogonys caudatus*
 Salvin's Silky Flycatcher, *Phainoptila melanoxantha melanoxantha*
 Guatemalan Sugar-bird, *Diglossa baritula montana*
 Costa Rican Scarlet-thighed Sugar-bird, *Dacnis venusta venusta*
 Guatemalan Green Sugar-bird, *Chlorophanes spiza guatemalensis*
 Gray-headed Olive-back, *Nesocharis capistrata*
 Salmon's Giant Cacique, *Ostinops angustifrons salmoni*
 Guatemalan Oriole, *Icterus gularis gigas*
 Mexican Green Tanager, *Chlorophonia occipitalis occipitalis*
 Gould's Euphonia, *Tanagra gouldi gouldi*
 Crimson-collared Tanager, *Phlogothraupis sanguinolenta sanguinolenta*
 Belize Red Tanager, *Piranga flava figlina*
 Gray-headed Tanager, *Eucometis penicillata spodocephala*
 Tabasco Ant Tanager, *Habia gutturalis littoralis*
 Tawny-crowned Tanager, *Tachyphonus delatrii delatrii*
 Bolivian Seed-eater, *Sporophila hypochroma*
 Pelzeln's Saffron Finch, *Sicalis flaveola pelzelni*
 Guatemalan Junco, *Junco phaeonotus alticola*

Each of these, for its rarity alone, is worthy of special mention, yet several stand forth with particular emphasis. Most important of all these bird arrivals was that of a Monkey-eating Eagle, brought from the Philippines by Lieutenant Wharton. This huge bird, of classically weird appearance, is most sought of the world's eagles and has been imported into this country on only one previous occasion.

When the Cordiers were dispatched to Costa Rica in April, their principal objectives were the Umbrella Bird and the little-known Three-wattled Bell-bird. Previous experience had made known the exact time and place where each was to be found and fixity of bird habits, even in the tropics, produced both rarities on schedule. The first Umbrella Birds publicly exhibited were obtained for us by Mr. Cordier in 1942 but we were glad of the renewal. The Three-wattled Bell-bird, one of a tropical group remarkable for the almost incredible carrying power of its clanging notes, has not previously been exhibited alive and is another undoubted "first" to the credit of Mr. Cordier.

In the collections brought by Mr. Cordier from Guatemala and Costa Rica, were no less than 21 kinds of Hummingbirds that were new to us. We now have shown a total of 55 forms of these scintillating beauties and have succeeded in developing satisfactory tech-

niques for their care and feeding, ably carried out by Head Keeper George Scott.

Many fine replacements of species long lacking, were made during the year. King Penguins received in early summer succumbed to long-continued heat but three of these impressive creatures obtained early in October responded to the cool days of autumn by going into a satisfactory but slightly appalling molt. With the Kings came three Gentoos, nearly as large and distinguished by bright yellow feet. We anticipate the construction of air-conditioned quarters for these birds before hot weather comes again.

When Dr. Ripley's Lesser Pandas arrived, early in July, they were accompanied by 64 birds of 25 kinds. One of these — the Sikkim Red-headed Jay-thrush — was new to us and all were welcome replacements of Indian species after several years' absence.

The purchase of a young Shoe-bill, in July, filled the gap caused by the death of our old "Jimmy," who had been with us for more than twenty years. With the new bird came a tame and attractive Saddle-billed Stork — the very finest of this stately group.

Our patron, Mr. Claude Hooke, presented gallinaceous birds to a total of 34, representing 16 species. Mr. E. J. Hallstrom, of Sydney, Australia, also a patron of the Society, sent us 42 Australian birds of five species.

So many bird arrivals taxed our accommodations to overflowing and a total of 189 were released, by sale or exchange, to other Zoological Gardens, both in this country and in Europe. Hummingbirds were sent by air to St. Louis with complete success, as were a pair of Quetzals and a Hummingbird to London.

A young Wattled Crane was successfully reared, duplicating our world's record established in 1945. Our Rheinart's Argus Pheasants, now the only breeding pair in this country, reared a single youngster. This was sent, in exchange, to Mr. Hooke, in the hope that a breeding stock may be built up in the more favorable climate of California.

The former site of the demolished Wolf and Fox Dens was landscaped and provided with a waterfall and a boundary fence. Under the name of "Bird Rock," it now provides an attractive summer exhibition area for Crowned and Demoiselle Cranes, Golden Pheasants, Screamers and Waterfowl.

CENSUS OF THE BIRD DEPARTMENT

December 31, 1947

<i>Orders</i>		<i>Species</i>	<i>Specimens</i>
Struthioniformes	Ostriches	1	1
Rheiformes	Rheas	1	2
Casuariiformes	Cassowaries and Emus.....	2	3
Tinamiformes	Tinamous	2	2
Sphenisciformes	Penguins	5	18
Pelecaniformes	Pelicans, Cormorants, etc.	10	25
Ciconiiformes	Hérons, Ibises, Storks, Flamingos, etc....	27	54
Anseriformes	Swans, Ducks, Geese and Screamers.....	55	428
Falconiformes	Vultures, Hawks and Eagles.....	23	29
Galliformes	Quail, Pheasants, etc.	56	124
Gruiformes	Hemipodes, Cranes, Trumpeters, Rails, etc.	24	55
Charadriiformes	Plovers, Sandpipers, Gulls, etc.	22	63
Columbiformes	Pigeons, Doves and Sand-grouse.....	35	62
Psittaciformes	Parrots, etc.	23	35
Cuculiformes	Touracos and Cuckoos.....	6	6
Strigiformes	Owls	9	11
Apodiformes	Hummingbirds	25	32
Trogoniformes	Trogons and Quetzals.....	3	7
Coraciiformes	Kingfishers, Hornbills, etc.....	10	14
Piciformes	Barbets, Toucans and Woodpeckers.....	19	22
Passeriformes	Perching Birds	245	512
Totals		603	1,505

Summary: Orders, 21; Species, 603; Specimens, 1,505.

REPTILES AND INSECTS

BRAYTON EDDY, *Curator*

FRED TAGGART, *Head Keeper*

REPTILES • The global character of our amphibian and reptile exhibits, obscured by losses sustained during the war and post-war periods, has again been brought into sharp focus. From Australia, Africa, Europe, Palestine, India, Malaya, the Philippines, Mexico, Central and South America have come live animals of distinction for display in our Reptile House. Some of them have been purchased but the overwhelming majority have been acquired by gift, exchange or staff collection.

Among the 123 specimens purchased, those worthy of particular mention for eye appeal are the following: Brown-tailed Tree Snake, Wagler's Pit Viper, Mangrove Snake, Green Whip Snake, African Chameleon, Horned Viper and Two-banded Monitor. The first two serpents, technically known as *Elaphe oxycephala* and *Trimeresurus wagleri*, have not previously appeared on our records.

Gifts totaling 417 specimens have been received from 154 persons, including several members of our Society. Mr. Heru ra Walmsley donated 9 reptiles from the vicinity of California. Among them were a Red Rattlesnake and a Silvery Footless Lizard. Mr. Saul Blickman shipped us from Florida an amazing assortment of 21 showy snakes and 43 tree frogs. Mr. Arthur P. Braaton of Long Island brought an unusual bright yellow frog with pink eyes caught in a fresh-water pond near his home. It was found living with true Green Frogs, to which species it belongs, and is now exhibited with one for comparison. The yellow skin results from lack of blue pigment and the pink eyes are indicative of albinism. Mr. Charles Haas gave us 2 Spectacled Caiman and other friends have sent contributions including the Northern Chuckwalla, Texas Blind Snake (among the smallest of serpents), Sonoran Skink, Red Hog-nosed Snake and Sidewinder Rattlesnake.

From the Taronga Zoological Park in Sydney, Australia, through the courtesy of Mr. David Fleay, we received an attractive Diamond Python, a Red-bellied Black Snake and a deadly Tiger Snake.

By exchange agreement with foreign correspondents we have acquired many fine specimens. Four separate air shipments from P. Maeder of Basle, Switzerland, yielded a wide assortment of common and many not-so-common reptiles from Europe and North Africa. Altogether there were 23 species including colorful Lacerta Lizards, Eyed Lizards, Whip Snakes, Water Snakes and others. Two Bell's Dabb Lizards, Aesculapian Snakes, Montpellier Snakes and poisonous Vipers were especially admired.

Professor George Haas, of Jerusalem, sent us 36 interesting reptiles from Palestine. There were Fringe-fingered Lizards, Starred Lizards, Spotted Geckoes, Dwarf-legged Skinks and Eyed Skinks. All but the adult Starred Lizards, which are larger and inclined to be aggressive, have been placed together in one cage under the general label "Palestine." Señor Carlos Guevara brought with him from Puerto Rico some Crested Anolis Lizards, Plain Snakes and Island Turtles.

Exchanges with the Washington Park Zoo, Oregon, the National Zoological Park, District of Columbia, Copenhagen Zoo, Denmark, Barrett Park Zoo, Staten Island, Lincoln Park Zoological Gardens, Chicago, and the St. Louis Zoological Park, Missouri, have netted 37 specimens of 13 separate species. Of especial note have been South American Poison Frogs, Speckled King Snakes, Rubber Boas, Three-toed Congo-eels, Pacific Garter Snakes, San Diego Plated Lizards and Western Mud Snakes. Two of our Galápagos Tortoises were sent away on an indefinite loan basis, one to the Toledo Zoological Society and one to the London Zoological Society.

The Reptile Department received an outstanding collection of 37 Costa Rican frogs, lizards and snakes as a result of the Cordier expedition. Among them were Scarlet Frogs (*Dendrobates typographus*), Mottled Frogs (*Atelopus varius*), Green Swifts (*Sceloporus formosus malachiticus*), Double-crested Basilisks (*Basiliscus plumifrons*) an Allied Spiny-tailed Iguana (*Ctenosaura similis*) and a Black Tree Snake (*Chironius fuscus*) — none of which have previously appeared on our records. A more colorful ensemble has not been seen in many years.

A two weeks' motor trip to South Carolina by the Curator, accompanied by Mr. Dunton, Staff Photographer, was made for the dual purpose of capturing live reptiles and getting photographs of collecting methods and certain pictures for the Conservation Department. The trip proved most successful, due in no small part to

a local hunting club which provided horses and guides and extended many other courtesies. In five collecting days we caught and shipped to the Park 69 live snakes, lizards and frogs of 15 species. Among them were 4 Canebrake and 17 Diamond-back Rattlesnakes. All specimens were taken by hand and were in prime condition, which gave assurance of a long life expectancy. Surplus stock was used for exchange purposes.

In early October a one-day's collecting trip with Mr. Dunton and Keeper Chace to the Bear Mountain area of New York netted, besides photographs, 7 desirable snakes for our Northeastern States display.

Improvements

The installation of fluorescent lights above the oval cages on the south side of the Reptile House, both to cut consumption of electricity and to eliminate fuse trouble, proved an eye opener in more ways than one. The change-over actually gave more illumination for less money, but live plants in the cages soon faded and died because they could not manufacture chlorophyll. Also, the light lacked color warmth. Finally it was discovered that an adjustable fixture with a tubular-type reflector, using a small incandescent bulb, would give a pleasing light, stimulate plant growth and yet not overload the electric line.

This discovery led to a change in the lighting system employed in the larger cages at the east end of the building. There reflections were bad and fluorescent lights made the proposed introduction of plants impractical. By wiring the cages for incandescent lights, to use in conjunction with the fluorescent ones, warmth of color was gained, reflections reduced, and it was possible for the keepers to landscape attractively nine cages with natural pools, stumps and growing plants. Both public and snakes have benefited.

Six dioramic cages on the north side of the Reptile House have been repaired and redecorated, and necessary changes in the public area have been made.

Public Service

More than 1,100 letters were written during the year, about 70% pertaining to reptiles. Copy was prepared for 124 reptile labels. Notes were furnished Jack Layer, Journal-American photographer, for his series of thirty-three pictures taken at the Reptile House.

Educational material for the Reptile House Bulletin Board was changed four times. Scientific inquiries from eleven magazines and newspapers, three research bureaus, two radio programs and one photo service were answered; and the reptile section of the official Guide Book was revised for a forthcoming new edition.

The poison glands of a Russell's Viper were extracted and sent by request to Dr. Daniel Nicholson, Professor of Pathology at the University of Manitoba in Winnipeg, Canada.

At the Society's Annual Meeting in January, two Great House Geckoes and twelve European Edible Frogs were displayed. A Conservation Exhibit was furnished for the National Sportsmen's Show. It was designed to stress the importance of certain snakes to our economy. The harmless Milk Snake was placed with a poisonous Copperhead, the harmless Hog-nosed Snake with a poisonous Timber Rattlesnake, to enable uninformed visitors to distinguish between species that resemble each other. An Eastern Pine Snake was also shown. Six Northeastern States snakes were furnished for a Society exhibit at Grand Central Palace during the Christmas holidays.

Four guided tours of the Reptile House were furnished by request to members of the Adirondack Mountain Club, Munsey Park School, Yonkers' YMCA Camp and Camp Iroquois boys. Two lectures, illustrated with live snakes, were given before The Hippocrates Society and the Boy Scout Camporee at Mount Vernon. On seven occasions Curator Eddy was one of a Panel Forum which provided entertainment, answering questions on reptiles and insects and exhibiting live snakes, for veterans at five different army, navy and marine hospitals.

Eight hundred and eighteen reptiles and amphibians were acquired this year by purchase, gift, exchange or collection. Many of the commoner ones, indigenous to the New York area, were released where they had a good chance of survival, and many others were used as exchanges. We regret to report the death of a Rainbow Boa which has been with us since 1920.

INSECTS • The Insect Department continues to function primarily as a source of public information on culturing, identification and control of insects. Exhibit space is limited to a few cages in the Reptile House, which are made available only at a sacrifice of reptile displays. There is nothing new to report regarding the proposed Insect House, nor will there be until building costs come down.

CENSUS OF THE REPTILE DEPARTMENT

December 31, 1947

<i>Orders</i>		<i>Species</i>		<i>Specimens</i>	
		1946	1947	1946	1947
Caudata	Salamanders	2	1	8	12
Salientia	Frogs, Toads	7	10	35	63
Loricata	Alligators, Crocodiles	5	7	42	25
Squamata	Snakes	32	52	68	109
	Lizards	14	17	39	49
Testudinata	Turtles, Tortoises	32	39	144	172
Totals		92	126	336	430

Summary: Orders, 5; Species, 126; Specimens, 430.

This period has given us an opportunity to experiment with culturing certain insects, some of which are intended for feeding purposes and some for future displays. We raised about 3/4 million mealworms, an equal number of Dermestid grubs and hundreds of thousands of Drosophila and Muscoid flies for feeding lizards and amphibians this year. Until provisions are made for proper control of temperature and humidity, however, the results of these experiments will remain unpredictable.

Of special interest during late June and July was a Persian Silkworm exhibit, stock for which was supplied through the courtesy of Mr. C. H. Gil, ardent sericulturist of New Jersey. Ten-day-old caterpillars were assembled on a screen tray and fed 3 times a day on mulberry leaves obtained from Park trees. Upon reaching maturity, many of the caterpillars spun cocoons against the glass front of their cage — much to the delight of the public. There was a total of 30 cocoons having an estimated thread length of nine miles. More mulberry trees have been planted for a larger silkworm display next year.

Following the silkworm attraction Ailanthus, Promethea and Cecropia caterpillars were shown. Several friends of the department, including retired Head Keeper Stacy of the Bird Department, furnished over-wintering cocoons from which moths emerged to lay eggs for the culture. Chinese Praying Mantises reared from egg masses were a constant source of interest to visitors.

The Wild Bee Tree lost its tenants in mid-June when waxworms took over. Under normal conditions a vigorous colony of bees can defend itself against intruders, but not when a large section of comb is exposed for observation purposes. The area was cleaned up and

a new colony introduced. The prospect of its success was not great because the main honey flow was over, but in four weeks fresh comb appeared and public interest was heightened. Then waxworms came again and the exhibit was closed for the season.

In its place was installed a winter exhibit of Giant Cockroaches. A shallow box of reeds was built against the glass interior to simulate the exterior and attached arbor of a native hut. Red peppers, Indian corn and other decorations were hung for atmospheric purposes. Many of the insects were 3 inches long with amber wings, which they preen interminably. This large exhibit was prompted by public approval of a smaller one set up last year.

Through the kindness of friends in Tennessee and California, it was possible to maintain a fine collection of scorpions throughout the year. When they bred and carried their young on their backs they were especially appealing. One of our members, Mr. Richard Vieth, provided us with a number of Trapdoor Spiders from California. Although they remain underground a large part of the time, the sly manner in which they raise the silken-hinged lid to their tunnels is well worth observing. One specimen built its tunnel against the front glass where every movement could be plainly seen.

The trip to South Carolina, during which many reptiles were caught, netted us 118 insects of which Bombardier Beetles, Passalus Beetles, Eyed Click Beetles and the Green Tumble Bug were placed on display.

Public Service

An exhibit of tarantulas and Black Widow Spiders, both poisonous and found in New York, was provided for the National Sportsmen's Show. Although tarantulas are not native to this region, they frequently arrive on bunches of bananas. Assistance was given *Life Magazine* in photographing Parasol Ants for a fall issue, the *New York Journal-American* in getting close-up pictures which have appeared at frequent intervals, and many other photographic agencies.

Yellow-jackets were furnished Dr. Ely Pearlman, who is analyzing the contents of their poison sacs for medical purposes; and live Tortoise Beetles were supplied Dr. R. B. Swain for illustrating a forthcoming Federal publication. Exchanges were made with Herbert Rose of England.

Approximately two hundred insect letters and 11 insect labels were written, and 140 species of insects were mounted for our insect

collection. Scientific inquiries were answered for five different magazines and newspapers, one radio program, two information services and one theatrical producer.

A paper by Mr. Eddy entitled "Live Insect Exhibits" was read in Boston before a meeting of the Northeastern Forest Disease and Insect Control Committee, made up of delegates from all the northeastern states and adjacent Canada. An article entitled "What Good Are Insects?" was written for the School Nature League Bulletin of the National Audubon Society. The entomological nomenclature in Dodge & Rickett's classic book, "Diseases and Pests of Ornamental Plants," was brought up to date for a forthcoming new edition. Meetings of the AAAS, the American Association of Economic Entomologists and The Entomological Society of America were attended in Chicago, Illinois.

Forty-nine species of Arthropoda, mostly insects, were placed on display this year.

CENSUS OF THE INSECT DEPARTMENT

December 31, 1947

<i>Orders</i>		<i>Species</i>	<i>Specimens</i>
Coleoptera	Beetles	9	thousands
Diptera	Flies	2	thousands
Hemiptera	Bugs	1	dozens
Hymenoptera	Ants, Bees, Wasps	5	thousands
Lepidoptera	Butterflies, Moths	6	75
Orthoptera	Mantes, Cockroaches	9	thousands
Araneida	Spiders	6	38
Pedipalpida	Whip Scorpions	1	1
Scorpionida	True Scorpions	1	2
Totals		40	many thousands

Summary: Orders, 9; Species, 40; Specimens, 1000's.

HOSPITAL ANNUAL REPORT

LEONARD J. GOSS, *Veterinarian*

THIS YEAR was marked by the arrival of a varied group of rare animals. For the greater part, they came to us in good condition and survived the changes in environment and climate. The principal losses in the new arrivals were the Yapock and the two Haitian Hutias. The latter showed no gross lesions other than emaciation which would tend to indicate the diet we supplied them was lacking in one or more essentials. The Yapock did not respond to penicillin and sulfadiazine therapy and died of pneumonia.

The eighteen-months-old Orang-Utan, male, received June 27 weighing eleven pounds, was discharged from the Hospital November 12 weighing nineteen pounds. While in the Hospital, he was treated for amebic dysentery. The original infection was treated for ten days with chiniofon followed by carbarsone for ten days. This, seemingly, effected a cure but was followed by a relapse requiring a second ten-day course of carbarsone. Since then, there has been no reoccurrence of the infection.

The pair of Gorillas continue to grow and prosper. The female attained a weight of 220 pounds in December having gained 36 pounds during the year. The male's weight was estimated at 300 pounds in December.

Births in the mammal collection numbered eighty-seven, an increase of twenty-three over last year.

Thanks to a wet spring and no prolonged dry spell during the summer, we avoided the frequent botulinus outbreaks in the wild fowl ponds. Twice, copper sulphate was used in the water to kill the algae to help keep down the formation of the toxin which so frequently causes losses of many wild fowl.

During the year, 192 mammals were accommodated in the Hospital for a total of 3,935 hospital days. In addition, there were 68 birds for 984 hospital days.

Losses of importance were the newborn Tree Shrews, the oldest

cow Moose, the female Bactrian Camel, a Jaguar cub and the first lot of four King Penguins. While the loss of the Tree Shrews was a great disappointment, we have reason to believe we have profited to the extent of having devised a formula that will be satisfactory for hand-raising any future ones born. The cow Moose had been troubled with greatly overgrown hooves since shortly after she arrived on September 25, 1942. Experience has indicated that Moose do not readily withstand handling for treatment. Consequently, we hesitated to undertake the task of trimming her feet if we could possibly avoid it, hoping that she would get through the winter and produce a calf in the spring. By late November, it was apparent she would not be able to maneuver through the snow during the winter. Chloroform anesthesia was given and the hooves trimmed. Death followed in forty-eight hours from pulmonary congestion and edema. She was not pregnant. Our sole hope to produce Moose in the Park now lies in the younger cow. Interestingly enough, her feet have remained normal while the bull's are beginning to become badly overgrown. Recent reports tell of the same condition occurring in nature and causing death by starvation through inability to move about to procure food. This only happens to certain animals which, perhaps, indicates some hereditary or familial influence.

The Bactrian Camel died of an unusual type of inflammation of the intestines.

The Jaguar cub died of the virus disease known as agranulocytosis or cat plague. It was received by us by air shipment in the incubative stages of the disease and died before anti-serum could be effective in saving it. It is worthy of note that this is the first case of this disease we have had since instituting the practice of vaccinating all Felidae against the disease.

The King Penguins were received late in June and were heavily infected with *Echinostome* intestinal flukes. The extremely hot weather and parasitism were more than they could withstand. However, the second shipment of these birds which arrived in October are doing well.

Visitors to the Hospital during the year were numerous and are indicative of the wide interest in the medical aspects of the Zoo. Some of the visitors were: Dr. Petrus du Toit, Director of Veterinary Services of the Union of South Africa; Dr. A. Hjärre, Director of The State Veterinary Medical Institute, Stockholm, Sweden; Dr. James H. Steele, Chief, Veterinary Public Health Division of the United

States Public Health Service; Dr. E. R. Quortrup of the United States Fish and Wildlife Service and Dr. Fritz Nillson, Professor of Surgery, Veterinary School, Stockholm, Sweden.

During September, we began a survey of the wild mouse population in the Park with the United States Public Health Service. Mice were trapped and examined for *Allodermanyssus sanguineus* mites, the vectors of a rickettsial organism. These organisms were incriminated as the cause of the over eighty human cases of rickettsialpox which occurred in New York in July. The vectors were found on many of the mice but none showed presence of the organisms.

The First Aid Station completed its first full calendar year in its new location adjacent to the Animal Hospital. It has proven a valuable adjunct to the public service extended to Zoo visitors and employes. A breakdown of its services shows 34.4% of the patients were Facilities Department employes, 34.1% other than Facilities Department employes and 31.1% visitors. In conjunction with this service, 307 employes were vaccinated against small pox during the outbreak of the disease in New York City in April. The Park physician, Dr. Joseph B. Wilkinson, donated his services to administer the vaccine with the assistance of the Nurse. By doing the vaccinations in the Park, practically every employe received the vaccine and avoided the inconvenience of standing in line at the City Health Department stations vaccinating the general public.

The American Museum of Natural History received twenty-nine specimens — seventeen birds, eleven mammals and one reptile deceased in the collection.

Material turned over to various institutions throughout the country for research numbered two hundred and ninety-two specimens. While not coming under the heading of pure science or strict scientific research, one of the organizations receiving material from us was the New York State Police Scientific Laboratory in Albany. Many samples were supplied to them in reply to a request for hair from animals not common to North America for use in crime detection. The balance of the specimens sent out were dispatched to various specialists working in different fields of research. In addition, several long-term projects are currently under way in the Hospital dealing principally with accumulation of data on physiology and pathology of wild animals.

A paper, "The External Genitalia of the Gorilla," was published

in *Zoologica*, Vol. 32, Part 2, July 31, 1947. Two papers, "Species Susceptibility to the Viruses of Carré and Feline Enteritis" and "Extraction of Canine Teeth in Primates" were given at the American Veterinary Medical Association Convention. The first of these two papers appeared in the *American Journal of Veterinary Research*, Vol. IX, January, 1948, No. 30. The second paper will subsequently be published.

In addition to the above mentioned Convention, the veterinarian attended the annual New York State Veterinary Medical Society meeting and visited the Yerkes Laboratories of Primate Biology. He served as Chairman of the American Veterinary Medical Association Committee on Diseases of Wild Animals and on the Parasite Committee of the New York State Veterinary Medical Society. He spoke before the Massachusetts State Veterinary Medical Society and the Bayside and Flushing Kiwanis Clubs.

The electric meat saw ordered in February, 1945, to cut the over one ton of horse meat prepared in the Cookroom each week was installed in January.

As indicated in the table at the foot of this report, the mortality in the bird and mammal collections is consistent with 1946 and below the past eleven years for which accurate records are available.

The feeding of eggs to certain stock was curtailed during the "eggless days" put into effect by the government.

MORTALITY TABLES FOR 1947

MAMMALS

<i>Year</i>	<i>Total in Collection</i>	<i>Died</i>	<i>Mortality Percentage</i>
1947.....	709	113	15.93
1946.....	651	110	16.89
1945.....	545	85	13.94
1944.....	503	63	12.5
1943.....	562	115	20.4

Total.....	2970	486
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AVERAGE MORTALITY FOR PAST 5 YEARS: 16.36%

AVERAGE MORTALITY FOR PAST 11 YEARS: 21.01%

BIRDS

<i>Year</i>	<i>Total in Collection</i>	<i>Died</i>	<i>Mortality Percentage</i>
1947.....	1991	276	13.86
1946.....	1573	217	13.79
1945.....	1525	234	15.34
1944.....	1609	265	16.4
1943.....	1803	340	18.8

Total.....	8501	1332
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AVERAGE MORTALITY FOR PAST 5 YEARS: 15.66%

AVERAGE MORTALITY FOR PAST 11 YEARS: 16.52%

THE AQUARIUM

CHRISTOPHER W. COATES, *Curator and Aquarist*

JAMES W. ATZ, *Assistant Curator*

ROSS F. NIGRELLI, *Pathologist*

MYRON GORDON, *Geneticist*

PLANNING for the new New York Aquarium quite naturally continues as the focal point of this institution's activities, and completion of detail drawings of the proposed building and preparation of statistical data for the requisite legal documents has been the staff's principal concern in addition to its routine duties. Before this year only the broad outlines of the structure had been *designed*, but inevitably it had to be *planned* down to the dimensions of its smallest tank, the location of every valve and the construction of countless items ranging from walls of huge reservoirs to lips of tiny scum-gutters.

This detailing occupied the firm of Harrison, Fouilhoux & Abramovitz, in collaboration with Aymar Embury II, and the consulting engineers throughout the year, during which these architects called upon us constantly for technical advice and suggestions — counsel essential to creating a structure *that will work*, for any public aquarium, with its pumps, filters, heaters, refrigerators, air-compressors and machines of all sorts, is better thought of as a dynamic mechanism than a static building. In order that the architects and engineers comprehend the nature and complexity of the tasks involved in maintaining a collection of living aquatic animals and plants gathered from all over the world, a series of consultations at the Aquarium was held between these people and the staff, and the actual functioning of tankmen and equipment studied first hand. Explanation of the reasons behind the intricacies of aquarium management and our demands for peculiar arrangements and specifications amounted to nothing less than an abbreviated course in aquatic biology. Consultations and conferences at both the Aquarium and the architects' offices were held from March through December; a comparable degree of close cooperation between designer and client could only

have been required in the housing of some complicated, industrial chemical process.

Experiments, testing new materials or developing new techniques to be employed in the new Aquarium, were carried on as in previous years, with special reference to the construction, lighting, labeling and water circulation of exhibition tanks. Further developments of the improved type of tank, first reported last year, were effected, among them a method of setting plate glass at an angle inside its perpendicular metal framework, thus eliminating reflections. The best possible solution of the problem of lighting these exhibition tanks, within the limits of the building as now designed, has been arrived at by the planning of a catwalk above them that, among other things, will act as a grid for each stage (tank) below, giving maximum flexibility in type and location of lights.

After much thought and experimentation by ourselves and at least five groups of consulting designers and engineers, in addition to the architects, a new system of labeling has been proposed, one that we believe will prove outstanding among those in educational institutions. In the past, museum labels have been one of the weakest spots in the presentation of information to the visitor — almost “necessary evils.” Our new types should be an asset, adding to the attractiveness of the exhibition halls and calling attention to themselves insistingly, but without ostentation or apparent provocation. To do this in the semi-darkness, necessary to show off the exhibition tanks, is no simple matter, and some labels will utilize plastic edge-lighting, others transmitted light from either a continuous light band running around each hall immediately above the tanks or from the tanks themselves.

Suitable arrangement for the ingress and egress of water within the various exhibition tanks has perplexed us for some time. As with every item on public view in an aquarium, four different and sometimes opposing aspects had to be considered. Visitors desire that the points of entry and exit be as attractive and natural-looking as possible — which in effect means that they be as nearly invisible as possible — and that the water be kept crystal clear with no sediment at the bottom, no scum at the top and no bubbles at any level. Fishes require a complete circulation, that is, one in which no “dead pockets” of water occur, and also one that does not introduce excessive, infarction-producing amounts of gases into their tank. It is important, too, that they be prevented from gaining access to the

drain, where they not only are destroyed but can cause floods and even ruin pumps. Tankmen want water systems as foolproof as possible: pipes that will not become clogged, overflows that will prevent flooding yet always maintain the proper water level inside each tank, and intakes that will show at a glance just how much water is flowing into a tank, since the exhibits' lives depend on this stream and a single tankman often is responsible for many units. Last but not least, any proposed construction or equipment must be feasible and not too expensive to fabricate. One of the principal restrictions encountered in the large concrete tanks, for example, was that all structures had to be drawn on the simplest lines or curves so that they can be easily fashioned out of that substance and then waterproofed. Within the past year these diverse requirements were finally met, once again as successfully as possible within the confines of a building in which space is at a premium.

The planning of the Casting Pool and its adjuncts, which are to be part of the Zoological Park's Conservation Exhibit, also occupied the Curator-Aquarist, and he took part in several conferences and consultations with the Department of Parks, New York City, and the Department of Conservation, State of New York, on the requirements and availability of various species of game fishes to be kept in the pools.

Since no commercial dealers in earthworms would have been able to supply the Society's three Duck-billed Platypuses with their necessary daily two and one-half pounds of worms except at prohibitive cost, an earthworm farm was established in the basement of the Lion House under the direction of Curator Coates. An initial stock of 3,600 worms was obtained late in December, 1946, and 5,000 more in early 1947. This was our nucleus. From it three months later we were able to supply 10,000 worms for air shipment to Panama, where Mr. David Fleay picked them up to sustain his three charges on the last lap of their journey from Australia to the United States. It takes from 150 to 1,000 worms to weigh one pound, depending on their size. Of the size we generally provide, the Platypuses consume at least 25,000 per month. To supply these enormous numbers and still allow young worms time to grow sufficiently, earthworms, supplementing our "home bred" stock, were collected throughout the Zoological Park whenever possible. Winter found us with an estimated 305,000 worms, breeding and growing in pits totaling over 300 square feet in area, and this is estimated as ade-

quate to provide the three Platypuses with their ration and meanwhile produce enough young for the balance of the cold weather. Two of the Aquarium's men, Messrs. Thomas Callahan and James Malcolm, worked hard and long hours to achieve this. The Aquarium supervised the continuous shipping of crayfishes by air from Louisiana, also to be used as food for the Platypuses. Dr. James Nelson Gowanlock, Chief Biologist of the Louisiana Department of Wild Life and Fisheries, aided us materially in the establishment of these regular deliveries.

Exhibitions

Now that commercial collectors are again operating in the Far East, a number of species of tropical fishes, not available during the war, have once more appeared on the market. Acquisition of several of these permitted us to present a more diversified collection. Larger species, not suitable for most home aquaria, also began to be imported occasionally; in this manner we obtained the first Brown Gymnotids, Freshwater Puffers and Brown Characin that we have seen in quite a few years. Through the courtesy of Paramount Aquarium, Incorporated, we exhibited two pairs of large Disc Cichlids, and Mr. and Mrs. Harold Halsted Park, Jr., donated a Snakehead.

Two small marine circulations were reestablished with the aid of Mr. Eric K. Klaussmann, who obtained for us the pure sea water necessary to set them up. The near impossibility of getting pure sea water is the limiting factor in our marine exhibits at present. During the year we showed Dwarf Seahorses, Clownfish and a number of local marine forms in these circulations. The local species were collected for us by Mr. Joseph Mintzer.

Research

The most noteworthy development in the Aquarium's research program has been the expansion of its studies on the neoplasms of aquatic vertebrates. This was made possible by a series of grants from the National Advisory Cancer Council of the National Cancer Institute, United States Public Health Service, totaling \$15,088. A grant-in-aid of \$8,640 was made for the continuation, after June 30, 1947, of the work of Dr. Myron Gordon on heritable melanomas of fishes, and one of \$4,595 was made in September to enable Dr. Emil Liebman, formerly Research Fellow in the Department of Biology,

Princeton University, to investigate the changes occurring in the blood of these fishes as they develop pigmented cancers. At the same time a supplementary grant of \$1,853 was provided for Dr. Gordon and Dr. Victor V. Brunst, who is now working at the Aquarium's Genetics Laboratory under a Senior Fellowship obtained in June from the National Cancer Institute. Dr. Brunst, former Director of the biological laboratories of the Roentgenological Institute of Kiev, has developed a strain of Mexican salamanders with heritable melanomas that he has now established in our Genetics Laboratory, located in the American Museum of Natural History, which has been most generous with its space and facilities in furthering this work. Dr. Gordon, in cooperation with Dr. Nigrelli, is coordinating these and other researches into a unified attack on the problem of normal and abnormal pigment cell growth.

Other kinds of abnormal growths of fishes were also studied, among them lymphosarcoma, a pathological condition allied to the notorious Hodgkin's Disease of man. A laboratory for the study and timely diagnosis of hydatidiform mole in women, through the use of the African Clawed Frog, was established at the Jewish Memorial Hospital under the direction of Dr. Abner I. Weisman and Curator Coates.

Since 1940 the Aquarium's electric eels have become one of the key experimental animals employed in investigating the physiology of nerve, and the uses to which these fish have been put multiply with every year. At present, four different lines of inquiry, centering about analyses of the mechanism of their electric discharges, are being pursued by Dr. David Nachmansohn and his colleagues of the Department of Neurology of the College of Physicians and Surgeons, together with Curator Coates. Correlations between concentrations of the various enzymes found in electric tissue and accompanying electrical manifestations are leading to a better understanding of what chemical processes are responsible for the electric eel's electricity. That between adenosinetriphosphatase and cholinesterase has now been analyzed.* Another enzyme, choline acetylase, is also being investigated by means of the fish's electric tissue. A matter in which the Army Chemical Center is especially interested is whether there exists a stoichiometric relationship between cholinesterase and di-isopropyl fluorophosphate, the war gas, DFP. Not only is the eel being used to help discover the way in which DFP does its deadly work, but, conversely, the gas is being employed as a

tool to help us comprehend the functioning of the fish through its differential action on nervous and electric tissue. Finally, the electric organs of the eel still remain the only source of pure cholinesterase, which is an essential substance for many researches not immediately connected with our work at all.

Dr. Nigrelli spent one month on Bimini, Bahamas, at the Lerner Marine Laboratory of the American Museum of Natural History, studying the local fauna, especially the parasites of fishes. The Aquarium's most important single source of tropical marine fishes has always been the West Indies. Unfortunately these fishes often bring with them into captivity certain ectoparasites that multiply very rapidly and cause devastating epidemics. It was discovered that, contrary to reports, the parasites in question are apparently to be found throughout this part of the Atlantic and that the usual collecting practices greatly increase the number of parasites per fish even before they are shipped north. Preliminary experiments were made on methods of treating fishes to rid them of parasites before shipment.

Queries into the genetics and evolution of fishes, both in nature and under domestication, were kept up in the Genetics Laboratory, and the first of a series of papers on population genetics of the Platyfish, a species uniquely useful for such analyses, was published in the new annual, *Advances in Genetics*.

Collaboration

The extent to which the Aquarium cooperates with and serves other public and educational institutions is a good measure of its vitality and usefulness, over and above its primary mission of entertaining and educating its own visitors and correspondents. Collaborators working with us during the year were:

DR. GEORGE M. SMITH, Department of Anatomy, Yale School of Medicine.

DR. RICHARD T. COX, Department of Physics, Johns Hopkins University.

DRS. DAVID NACHMANSOHN, HARRY GRUNDFEST, MORTIMER ROTHENBERG and MISS WYNN SHARPLES, Department of Neurology, College of Physicians and Surgeons, Columbia University.

DR. M. VERTNER BROWN, College of the City of New York.

DRS. HORACE W. STUNKARD and HARRY CHARIPPER, New York University.

DR. ELI D. GOLDSMITH and MR. PAUL BENZER, New York University Dental College.

DR. ABNER I. WEISMAN, Jewish Memorial Hospital and Metropolitan Hospital, New York.

MISS FRANCESCA LAMONTE, DRS. CHARLES M. BREDER, JR., LESTER R. ARONSON and T. C. SCHNEIRLA, American Museum of Natural History.

- DRS. CARYL P. HASKINS and SEYMOUR HUTNER, Haskins Laboratories,
New York.
- DR. BENJAMIN P. SONNENBLICK, Mount Sinai Hospital, New York and
Rutgers University, Newark.
- DR. DANIEL MERRIMAN, Bingham Oceanographic Laboratory, Yale
University.
- DR. MICHAEL LEVINE, Montefiore Hospital, New York.

Drs. Nigrelli and Gordon are giving courses in the Graduate School of New York University on fish diseases and genetics, respectively. The following candidates for advanced degrees are working under them on problems of aquatic zoology:

- MISS OLGA ARONOWITZ, New York University.
- MR. SAMUEL BIEBER, New York University.
- MR. WALTER CHAVIN, New York University.
- MISS EUGENIE CLARK, New York University.
- MISS ETHEL HAFTER, New York Zoological Society and New York
University.
- MR. THOMAS J. KING, New York University.
- MR. THEODOR R. MARCUS, New York University.
- MISS GLADYS RITTER, New York University.
- MR. WALTER L. SMITH, New York University and St. Francis College.
- MR. WILLIAM N. TAVOLGA, New York University.
- MRS. MARGARET C. TAVOLGA, New York University.

We have provided genetic stocks, technical advice and other services for the National Cancer Institute, the Department of Marine and Aviation, New York City, the Federal Security Agency, Pure Food and Drug Administration, the Atlantic States Marine Fisheries Commission, the Department of Health, New York City, the First Army Laboratory, New York City, the Long Island College of Medicine, the Celanese Corporation of America and the Robert James Foundation, Clearwater, Florida.

With the dampening of the war's repercussions and a return to peacetime activities has come a decided reawakening of interest in public aquariums. We have been consulted on projected municipal or state aquariums for no less than eight widely scattered localities: Bombay, Jerusalem, Suez, Buenos Aires, Acapulco, Quebec and La Jolla and Hermosa Beach, California.

Publications

The staff and those investigators directly sponsored by us published during the year:

MR. COATES

Aquariums. In *Britannica Book of the Year* (1948).

The Care of Turtles and Small Alligators. New York Zoological Society, 12 pp.

Tiny Terror. *Liberty*, October, p. 21.

The Kick of an Electric Eel. *The Atlantic Monthly*, Vol. 180, No. 4, pp. 75-79.

The Diagnosis of Hydatidiform Mole by Gonadotropic Hormone Assay Using the South African Frog, *Xenopus laevis*. With Abner I. Weisman. *Journ. Clinical Endocrinology*, Vol. 7, No. 4, pp. 289-292.

Weekly column on fishes in the New York *Sun* continued for seventeenth year.

MR. ATZ

New Tanks for Old. *Animal Kingdom*, Vol. 50, No. 3, pp. 84-88.

Water Is Much More Than H₂O. *Animal Kingdom*, Vol. 50, No. 4, pp. 114-119.

Ailing Angels—and Other Problems. *Animal Kingdom*, Vol. 50, No. 5, pp. 158-163.

DR. NIGRELLI

Spontaneous Neoplasms in Fishes. III. Lymphosarcoma in *Astyanax* and *Esox*. *Zoologica*, Vol. 32, Part 2, pp. 101-108.

Susceptibility and Immunity of Marine Fishes to *Benedenia* (= *Epibdella*) *melleni* (*MacCallum*), a Monogenetic Trematode. III. Natural Hosts in the West Indies. *Journ. Parasitology*, Vol. 33, No. 6 (Suppl.), p. 25. Abstract.

Preliminary Studies of the Effects of Sulfonamides on Fish and *Bacterium salmonicida*. With Walter L. Smith. *Zoologica*, Vol. 32, Part 3, pp. 121-123.

Endosphaera engelmanni Endoparasitic in *Trichodina spheroidesi* Infecting the Puffer, *Sphaeroides maculatus*. With Morton Padnos. *Zoologica*, Vol. 32, Part 4, pp. 169-172.

The Effect of Amputation of the Dorsal Fin upon the Development of Sd Melanomas in Hybrid Fishes. With E. D. Goldsmith and Myron Gordon. *Anat. Rec.*, Vol. 97, No. 3, pp. 72-73. Abstract.

A Species of *Hexamita* from the Skin of Two Cichlids. With Ethel Hafter. *Anat. Rec.*, Vol. 99, No. 4, pp. 127-128. Abstract.

DR. GORDON

Genetics of *Platypoecilus maculatus*. IV. The Sex Determining Mechanism in Two Wild Populations of the Mexican Platyfish. *Genetics*, Vol. 32, No. 1, pp. 8-17.

Speciation in Fishes. Distribution in Time and Space of Seven Dominant Multiple Alleles in *Platypoecilus maculatus*. *Advances in Genetics*, Vol. 1, pp. 95-132.

The three to one ratio in genetic sex determinations. *Genetics*, Vol. 32, No. 1, pp. 88-89. Abstract.

Melanomas in the Hybrid Offspring of Two Species of Swordtails, *Xiphophorus montezumae* and *Xiphophorus hellerii*. *Anat. Rec.*, Vol. 99, No. 4, p. 57. Abstract.

Organic Evolution and Genetics. American Year Book, 1947, pp. 797-804.

A Jewel Fish Aids Medical Science. *Aquarium Journ.*, Vol. 18, No. 1, pp. 18-22.

How Fishes Get their Names. *Aquarium Journ.*, Vol. 18, No. 4, pp. 7-12; 35.

The Effect of Amputation of the Dorsal Fin upon the Development of Sd Melanomas in Hybrid Fishes. With E. D. Goldsmith and R. F. Nigrelli. *Anat. Rec.*, Vol. 97, No. 3, pp. 72-73. Abstract.

DR. LIEBMAN

The Trephocytes and their Functions. *Experientia* (Basel), Vol. 3, No. 11, pp. 442-451.

Personnel

With regret we must report the death of Mr. John Shea, who died on March 7 at the age of fifty-eight. Mr. Shea had been in the employ of the Society for forty-five years. Messrs. James W. Atz and John P. Blair returned from military service at the beginning of February and March, respectively. Mr. Blair was put in charge of the Platypuses and handled them with success. Curator Coates was invited to become a member of the UNESCO International Section on Museum, Sub-section on Zoological Parks and Aquariums, for the years 1947-1948.

Dr. Nigrelli was elected first President of the newly organized American Society of Protozoologists. As Vice-President and Chairman of the Section of Biology, he continued to initiate symposia for the New York Academy of Sciences; those presented this year included programs on experimental embryology, thyroid and adrenal physiology, anti-histamines, allergies, fungi important to medicine and the chemotherapy of filariasis.

Dr. Gordon was appointed Research Associate in the Department of Animal Behavior at the American Museum of Natural History. He acted as Consulting Editor for the book, *The Biology of Melanomas*, which resulted from the symposium on normal and abnormal growth of pigment cells he organized last year under the auspices of the New York Academy of Sciences, and which will appear early in 1948. Two of the papers in this volume emanated directly from the Aquarium's Genetics Laboratory and two others were based on melanomas developed there.

Members of the staff gave papers, lectures, talks and demonstrations at the following institutions and places:

Fourth International Cancer Research Congress, St. Louis.
Rockefeller Institute for Medical Research, Princeton, N. J.
American Association of Anatomists, Montreal meeting.
American Society of Zoologists, Chicago meeting.
American Society of Parasitologists, Chicago meeting.
Society for the Study of Evolution, Chicago meeting.
American Society for the Study of Sterility, Atlantic City meeting.
International Scientific Radio Union, Institute of Radio Engineers and
American Physical Society, Washington meeting.
New York Academy of Medicine, Twentieth Graduate Fortnight.
Department of Zoology, Columbia University.
Journal Club, Osborn Zoological Laboratory, Yale University.
U. S. Naval Reserve Hospital, St. Albans, L. I.
Station Hospital, Camp Kilmer, N. J.
Station WJZ.

* The former probably plays a primary role in muscular contraction, whereas our experiments indicate that the latter is of primary importance in the electrical manifestations of nerve conduction, the former being here concerned only in the recovery process.

DEPARTMENT OF TROPICAL RESEARCH

WILLIAM BEEBE, *Director*

JOCELYN CRANE, *Research Zoologist* HENRY FLEMING, *Entomologist*

Zoological Park Laboratory

The year 1947 was spent by the Director and his staff in the laboratory headquarters of the department in the Zoological Park. This is an unusual occurrence and has happened only once before in the past thirty years. On our last trip to Rancho Grande the amount of new material obtained in the field by observation, experiment and record proved to be so extensive that the entire year was devoted to its study, elaboration and publication.

The present report falls under two headings:

- 1 — Activities in the Zoological Park Laboratory.
- 2 — Preliminary Plans for a forthcoming Venezuelan Expedition.

Exhibition

The "Lost in the Jungle" exhibit in the Heads and Horns Building, although it has been continuously on display for four and a half years, is still so popular that it has been renovated and started off on another season.

Collaboration with Other Institutions

Twenty-three collections of organisms have been shipped to specialists in all parts of the country for identification and study. Reports and papers on a number of these have already come in. Among the most important are: Bermuda half-beaks to the United States National Museum; a collection of atherinids and two hundred and fifty containers of blennies to Stanford University; six hundred and fifty diptera to the American Museum of Natural History; Rancho Grande amphibia to Haverford College, and reptiles to the American Museum. Dr. Pickford of Yale University has taken the octopi, and Dr. Rees of the British Museum the squids, comprising the extensive deep-sea collections from the *Arcturus*, *Zaca* and Bermuda. It is a

matter of great satisfaction that these exceedingly rare cephalopods, dredged from depths of one-half to two miles, many of them twenty years ago, are today perfectly preserved and in excellent condition for thorough study by these specialists who are leaders in their fields.

Collaboration with Venezuelans

Close touch has been maintained with Venezuelan government officials and citizens who have aided us in their country. This has been both by correspondence and by entertainment and the showing of our motion pictures in New York City.

Relations with the Creole Petroleum Corporation

A lecture was given before the Esso Research Club, and final arrangements have now been consummated for the making of Spanish script for those of Miss Jocelyn Crane's color movies which will be used for distribution in Venezuela.

Staff Activities

Henry Fleming has completed and published his studies of Rancho Grande sphinx moths. A total of sixty-seven species and thirty-eight hundred specimens makes this a notable contribution on a single group of moths collected at night from lights on the roof of the station.

Two other articles are ready for publication. Between ten and twelve thousand moths have been sorted and many collections of these and other insects packed and shipped to entomologists by Mr. Fleming.

Miss Crane's chief concern has been with the completion of the first part of an elaborate monograph on the structure, growth, courtship and other life activities of Rancho Grande jumping spiders. This is based on two years of observation, experiment and breeding from the egg through all molts to the adult. Its implications extend to corresponding work in many other groups of invertebrates and even vertebrate fields. Other work has been collaboration in the writing of the ecology paper, and a study of the habitats and habits of a group of intertidal *Zaca* crabs. Miss Crane has this year organized the entire lot of more than six thousand feet of color film, and provided commentary for the Creole Venezuelan reels. In June she was given an honorary degree by her alma mater, Smith College, in recognition of the excellence of her scientific work.

The Director spent the year upon Venezuelan material, both scientific papers and toward a forthcoming book dealing with the more popular aspects of the researches. The general paper on the ecology of Rancho Grande cleared the way for the first eight articles which appeared in *Zoologica* during the year.

Of especial interest is a preliminary publication on the various types of bird migration at Rancho Grande, the adjacent Pass of Portachuelo proving to be a flyway of the first importance for both birds and butterflies. Future observations in the field are planned to supplement those in hand.

Forty-seventh Expedition

Thanks to the continued generosity of the Creole Petroleum Corporation and the interest of the Venezuelan Government, the department will be able to initiate its Forty-seventh Expedition to Venezuela early in 1948. It is planned to establish headquarters in Caracas on the estate and at the invitation of Mr. and Mrs. William H. Phelps. From here, trips of longer or shorter extent will be made to Rancho Grande, the llanos and elsewhere. Further details belong to the report at the end of the coming year.

Publications

Thirty-one contributions from the department appeared in print during 1947, of which eleven came out in *Zoologica* and five in the Zoological Society's ANIMAL KINGDOM. Five more were published in Venezuela in the Spanish language.

Further translations of Dr. Beebe's books are being made into French, Spanish, Portuguese and Turkish.

CONTRIBUTIONS FOR 1947

- 752 — Ecology of Rancho Grande, a Subtropical Cloud Forest in Northern Venezuela. William Beebe and Jocelyn Crane. *Zoologica*, Vol. 32, No. 5, pp. 43-60.
- 753 — Two New Pseudoscorpions of the Subfamily Lamprochernetinae from Venezuela. C. Clayton Hoff. *Zoologica*, Vol. 32, No. 6, pp. 61-64.
- 754 — A List of the Mammals Collected at Rancho Grande, in a Montane Cloud Forest of Northern Venezuela. G. H. H. Tate. *Zoologica*, Vol. 32, No. 7, pp. 65-66.
- 755 — A New Species of Hesperiidæ from Venezuela. Ernest L. Bell. *Zoologica*, Vol. 32, No. 8, pp. 67-68.
- 756 — Piccard's Deepsea Sounding. William Beebe. *Daily Colonist*, Victoria, British Columbia. October 26.
- 757 — Importantes Descubrimientos Científicos Hizo Doctor Beebe. *El País*, Caracas.

- 758 — Investigaciones del Doctor Beebe en Rancho Grande. *Panorama*, Caracas.
- 759 — Investigaciones del Doctor Beebe En la Fauna Venezolana. *El Nacional*, Caracas. June 4.
- 760 — En el Instituto de Ciencias Naturales. *Panorama*, Maracaibo, Venezuela.
- 761 — Studies of South American Psammocharidae. Nathan Banks, *Bull. Mus. Comp. Zool.*, Vol. 96, No. 4, pp. 311-525.
- 762 — Camp in British Guiana. William A. Murrill. *Autobiography*, pp. 121-127.
- 763 — What Happens When Jungle Animals Take Over. William Beebe. *Animal Kingdom*, Vol. 50, No. 1, pp. 25-28.
- 764 — The Rare and the Beautiful Aburria. William Beebe. *Animal Kingdom*, Vol. 50, No. 2, p. 47.
- 765 — Lore and Lure of Ocean. William Beebe. *Herald-Tribune*, April 13.
- 766 — La Gran Rana Gris de Rancho Grande. William Beebe. *El Farol*, Febrero, pp. 28-31.
- 767 — A Hall of Ignorance. William Beebe. *Museum News of Stamford*, Vol. 8, No. 1, p. 2.
- 768 — Frog with the Golden Eyes. William Beebe. *Science Illustrated*, June, pp. 22-23.
- 769 — Report for 1946 of Department of Tropical Research, *Annual Report*, N. Y. Zool. Soc., pp. 33-37.
- 770 — Smith College Honorary Science Degree. *Animal Kingdom*, Vol. 50, No. 4, p. 134.
- 771 — Eastern Pacific Expeditions of the New York Zoological Society. XXXVIII. Intertidal Brachygnathous Crabs from the West Coast of Tropical America with Special Reference to Ecology. Jocelyn Crane. *Zoologica*, Vol. 32, No. 9, pp. 69-95.
- 772 — Notes on the Hercules Beetle, *Dynastes hercules* (Linn.), at Rancho Grande, Venezuela, with Special Reference to Combat Behavior. William Beebe. *Zoologica*, Vol. 32, No. 12, pp. 109-116.
- 773 — Jungle War, William Beebe. *This Week*, February 16.
- 774 — Battling Beetles. Anonymous. *Look*, December 11.
- 775 — Snake Skins and Color. William Beebe. *Copeia*, Vol. 1947, No. 3, pp. 205-206.
- 776 — A Zoo within the Zoo. William Beebe. *Animal Kingdom*, Vol. 50, No. 5, pp. 145-150.
- 777 — The Editor's Choice. Ellery Sedgwick. *The Atlantic Monthly*, November, p. 107.
- 778 — Notes on Ectoparasites from Venezuela. Irving Fox. *Zoologica*, Vol. 32, No. 13, pp. 117-119.
- 779 — Sphingidae of Rancho Grande, North Central Venezuela. Henry Fleming. *Zoologica*, Vol. 32, No. 16, pp. 133-145.
- 780 — Scale Adaptation and Utilization in *Aesiocopa patulana* Walker. William Beebe. *Zoologica*, Vol. 32, No. 17, pp. 147-152.
- 781 — Avian Migration at Rancho Grande in North-central Venezuela. William Beebe. *Zoologica*, Vol. 32, No. 18, pp. 153-168.
- 782 — Ithomiinae (Lepidoptera) of Rancho Grande, Venezuela, Including Two New Species. Richard M. Fox and Jean W. Fox. *Zoologica*, Vol. 32, No. 20, pp. 173-178.

CONSERVATION DIVISION

GEORGE E. BREWER, JR., SAMUEL H. ORDWAY, JR.,
A. WILLIAM SMITH, ROBERT G. SNIDER

AT THE Society's Conservation Office, 122 East 58th Street, the way has been laid for the early translation of a dream of extraordinary challenge into planned productivity.

Last year the Society's members were informed that a Conservation Division had been established, following receipt of the Mary Clark Thompson bequest, to plan a long-range program for the conservation of wildlife and those essential resources of forests, water sources and productive soil needed to support all life on earth. The Society's membership responded enthusiastically and has expressed throughout the year great interest in this undertaking.

Because the problems of conservation and utilization of resources are international in scope, the Trustees of the Society considered it wise to create a separate fact-finding and fact-disseminating organization under sponsorship of the Society to forward its conservation objectives. The staff was instructed to devote itself exclusively during the first year to study and planning and not to the execution of any specific projects or public action.

The initial staff has therefore directed its efforts towards formulative programs in research, education and international relations.

The staff set out, first of all, to explore the nature and extent of the problems created by long misuse of the world's resources, and sought immediate advice and aid from outstanding scientists in the fields of zoology, biology, animal ecology, agronomy, hydrology and geography. In this connection the wide experience, scientific knowledge and ready counsel of the Society's own curators, available at all times in many fields of learning, proved particularly useful.

Next, the staff proceeded to formulate definitions of long- and short-term objectives, and in this effort sought also the advice of leaders in the fields of economics, education, population, government and foreign and public relations.

In May, the first interim report of the staff, on scope and objectives of the Division, stated this premise:

"The world's resources of animal and plant life, forests, soil and water resources are being rapidly and dangerously depleted because man's present methods of exploiting Nature exceed her present power of replenishment. In the past thirty years this trend has rapidly increased. The problem is a worldwide problem which cuts across all geographical, cultural and racial lines. Time is actively working against man."

This report also defined objectives:

"The ultimate objective is to aid in reducing the destructive trend and to reestablish the favorable relationship between the need for and use of living resources, and the regenerating power of Nature."

Intermediate objectives were also stated:

"To bring public opinion to a thorough understanding of the dangers inherent in depletion of resources, and the vital necessity for concerted action of public and private interests to achieve specific and over-all conservation."

A series of conferences was next arranged with international and local governmental officials, and with leaders of other civic organizations and foundations, to explore the best methods of accomplishing these objectives. Supplementing these exploratory conferences, Mr. Brewer visited Europe to attend the International Conference called by the Swiss Office for the Protection of Nature at Brunnen and, thereafter, met with many scientists and conservationists in Scandinavia, Great Britain, Holland and Belgium. During the same period Mr. Ordway visited the western part of the United States including the Olympic Peninsula, and conferred with government officials, educators and civic leaders in the States of Washington, Oregon and California. Messrs. Smith and Snider visited conservation demonstration projects and educational endeavors in various areas. President Osborn again visited Jackson Hole and met with the Governor of Wyoming and State and Federal officials concerned with the protection of wildlife, grazing and National and State Parks and Monuments.

Returning from these investigations the staff proceeded, early in September, to analyze in terms of a long-range program the many proposals received for research and action in 1948, and to plan, select and formulate a limited number of initial projects to be submitted

for approval to the new Foundation's directors.

To aid in these analyses a formal Advisory Council was established consisting of:

- MR. HAROLD COOLIDGE, Executive Secretary, Pacific Science Board,
National Research Council
- MR. CHARLES SUTHERLAND ELTON, Director of Bureau of Animal Population,
Oxford University
- DR. CARYL P. HASKINS, research scientist in biology and related bio-physical
fields, New York
- DR. G. EVELYN HUTCHINSON, Osborn Zoological Laboratory,
Yale University
- DR. ALDO LEOPOLD, Department of Wildlife Management,
University of Wisconsin
- MR. WILLIAM VOGT, Chief of Conservation Section of the
Pan American Union
- DR. ALEXANDER WETMORE, Secretary of the Smithsonian Institution
- DR. HARRY GODWIN, Fellow of Clare College, Lecturer in Botany,
Cambridge University
- DR. A. V. HILL, Honorary Professor of Physiology, Biophysics Research Unit,
University College, London
- DR. V. VAN STRAELEN, Director of the Royal Museum of Natural History,
Brussels, and President of the Institute of National Parks of the Belgian
Congo.

Eleven projects have been finally formulated for presentation as the Division's proposed program for 1948. They consist of basic resource surveys into the extent of soil erosion, water levels, and nutrition, and their relation to animal life; a survey of conservation education in our schools and colleges; preparation of educational films; development of the conservation demonstration exhibit at the Zoological Park (the State of New York has appropriated \$245,000 to further this project); sponsorship of two international conferences; support of an international wildlife research center in Europe; a project to encourage publication of books and magazine articles dealing with conservation; and an investigation of means of broadening the base of public interest.

In the meantime, through a happy circumstance occurring early in the spring, the Conservation Division was able to obtain the immediate collaboration of one of the outstanding nature photographers in the country, John H. Storer. Through a special grant made to the Division's motion picture section, it became possible during the summer to proceed, under Mr. Brewer's direction, with preparation and photography of five conservation films. These are now in process of editing and with the assistance of our educational advisors

should be ready for distribution to the school system this winter through one of the leading film distributing agencies. It is planned that such of these films as are completed will be shown to the Society's membership at its next annual meeting. They include some of the most beautiful wildlife and nature pictures it has yet been the good fortune of the Society to offer, and state in compelling fashion the interdependence and nature of our life-supporting resources, the need for conservation and its philosophy and method.

Work on the plans for the Conservation Exhibit, at the Zoological Park, is now in progress. This Exhibit is to be located on twelve acres of land on the east side of the Bronx River adjacent to the new Parkway. The funds provided by the State for this Exhibit were appropriated before the present large increase in building costs. A number of conferences with administrators and teachers in the New York City school system, which will be one of the major beneficiaries of the Exhibit, and estimates of prospective attendances at the Exhibit all indicate the need for a substantial Introductory Building with an adequate auditorium and workshops, as well as outdoor planning to demonstrate the effect of misuse of forests, soils and water upon the wildlife which will be shown throughout the demonstration area. Enthusiasm and cooperation of the school authorities in the planning of this Exhibit should stimulate increased attention to the problem of conservation teaching in New York.

A committee of representatives of the State Education Department is meeting with representatives of the State Conservation Department and the Society to consider the objectives of conservation education and the best methods of integrating conservation teaching into the curricula of the school system. The studies of this committee constitute a preliminary step in the development of the 1948 project for a survey of conservation education throughout the United States.

The funds needed to finance the 1948 program, while considerable, are fractional in comparison to the capital losses occurring annually in wasted resources vital to human welfare. But the problem is spiritual as well as economic. Life-supporting resources are the sustaining heritage of mankind essential to sufficiency and security on our impoverished planet. They need to be more wisely used. Peace and Good Will on Earth wait now, more than ever upon man's understanding of this fact and upon his adjustment to his environment. The new Conservation Division is dedicated to advancing this understanding and adjustment.

THE JACKSON HOLE WILDLIFE PARK

Jackson Hole, Wyoming

JAMES R. SIMON, *Director*

THE Jackson Hole Wildlife Park during the year 1947 has made a substantial start in realizing its objectives: i.e.: various animals are now at home in the enclosures and the first summer's research and training program has been completed.

On August 26, 1947, a special meeting of the Board of Trustees of the Jackson Hole Wildlife Park was held at the Park. The following trustees were present: Messrs. Laurance S. Rockefeller, Chairman, Fairfield Osborn, Harold P. Fabian, Foster S. Scott, Carl Jorgensen and Gilbert O. Housley. Also present were Leslie A. Miller, a member of the Board of Trustees of Jackson Hole Preserve, Inc., and James R. Simon, Director of the Park. Matters of business coming before the board were: Appointment of an Executive Committee to which Messrs. Fairfield Osborn, Harold P. Fabian and Lester Bagley were reappointed; the execution of the lease of the lands for the Wildlife Park for the rental of \$1.00 per year and payment of taxes was agreed upon, and rental of the Hogan Place (that part under fence which is the permanent residence area for the park) to the Wildlife Park at the rate of \$100.00 per month. Messrs. Fabian, Simon and William R. Miller, secretary to Jackson Hole Preserve, Inc., were given authority to sign checks for the corporation. Mr. Simon was appointed resident agent. Mr. Osborn reported on the corporation's finances and also gave a progress report. The Game and Fish Commission as represented by the attending members offered to pay the expense of furnishing animals to the park in addition to their cash contribution. The Executive Committee was authorized to select and appoint members to an Advisory Board of not less than three and not more than seven members. The director reported on fencing, the road progress, plans for building, field research and recommended a tentative date for the formal opening of the park — between July 1 and 15, 1948.

Construction

The steel and buck and pole fences were completed late in the summer. The hay shed capable of storing 80 tons of hay and concentrate was built approximately 200 yards from the eastern fence line, well hidden by trees. Winter feeding of the animals is being carried on in the open space between the hay shed and a spring which flows near the eastern fence, an ideal location. A small dwelling of four rooms and bath, 22 x 34, was completed at the residence area. A small log building, 12 x 14, to be used as an information center during the summer of 1948 and later as a utility building at the new headquarters was also completed. A foundation was completed for the new laboratory building at the new headquarters, a half mile east of the Grimmacy Place. Logs are on hand to be used for this.

Roads and Bridges

Two bridges were built on the old county road which runs through the center of the west part of the Wildlife Park. This road was kept in repair during the summer. Two parking areas and approaches from the main highway were graded by the State Highway Department. One of these is located in the buffalo pasture at the spot chosen for a permanent information building and roadside museum. The other is about midway between the east and middle cattle guards on the north side of the road facing the hillside where some of the animals are expected to be feeding part of the time.

Miscellaneous Work

General repair work was done as needed on all the buildings in the residence area and at the Grimmacy Place which was used as summer headquarters. At the former, the more important work included a concrete floor in the basement, installation of storm windows and re-roofing one-fourth of the main dwelling house. Sixty-eight tons of hay were irrigated, tended, hauled and stored. Twelve additional tons of extremely choice hay were purchased from the Elk Ranch and stored in the new shed. Old trash dumps and camp grounds were cleared over the entire area. Old timbers and fencing were burned and most of the old fence dividing former property was torn down. Many poles and bucks and barb wire used in the game fence were salvaged. An 80 foot flume was installed in the Markham

Ditch; the large spring which originally flowed outside the enclosure on the east side was diverted to flow inside the fence for use as a water point for animals.

Landscaping

After the boundary fencing was completed, it was learned that it was not nearly so noticeable as had been thought likely, hence, much of the landscaping originally planned was unnecessary. After the permanent headquarters site was chosen, some experimental planting was done in order to screen this area. Just previous to the fall wet season (October 23) 25 pine seedlings, 25 quaking aspens, 25 willow cuttings and 25 narrow leaf cottonwoods were planted there.

Cattleguards and Fences

The elk migration which was heaviest from November 10th to 25th proved that the cattleguards as installed originally were useless in turning back elk even though kept entirely clear of snow. The original installation of heavy railroad rails four inches apart with flanges only two inches apart allowed elk to cross readily by inserting their hooves between the rails and onto the flanges four inches below. Immediate modification of the guards was started by cutting out one flange of each rail beginning from the inside of the park. While this work was going on many elk entered the park; 82 were actually counted at one time in the buffalo pasture. Modification resulted in keeping elk inside the fence but they still entered. Cutting *both* flanges on all rails has since proved the efficiency of the guards. Experiments were conducted to learn the best methods of clearing snow from the cattleguards and it was learned that a mixture of waste motor oil and gasoline or fuel oil burned underneath the rail gratings did the job satisfactorily. To date the only repair necessary in addition to the modification just discussed has been the rewelding of two rails broken loose by snow plows. The elk migration proved that the buffalo pasture fence was too low for elk as they jumped it readily and as some of the larger bulls hit the top and the fence was further lowered, all members of a herd could pass over it. This fence was designed to hold buffalo which purpose it no doubt will accomplish and the treatment of it by elk is pointed out here only because the elk will from time to time during migrations in both directions attempt to enter the buffalo pasture. Any time an elk jumps a fence or attempts to do so, some damage can be expected.

Since the buffalo pasture is not used during the winter (all feeding is at the feed grounds east of the hay shed) this fence was not repaired so that elk could easily pass over it until the buffalo are driven to their summering area.

Animals Held at Present

The Wyoming Game and Fish Department has furnished 14 antelope and one whitetail deer. Forty elk, six deer and one moose remained in the area after all work on fences and guards had been completed. Twenty buffalo were secured at Yellowstone National Park.

Library and Collections

The Wildlife Park library consists of 70 bound reference volumes, 30 reference booklets, 300 reprints or separates and 1946 and 1947 numbers of twelve current biological publications. The most important acquisitions to the library are complete sets of the Journal of Mammalogy and the Journal of Wildlife Management and a nearly complete set of Zoologica, all extremely important references. It is hoped that complete sets of other important journals can be obtained from time to time. The collections include approximately 64 study skins of small birds and mammals; others will be forthcoming when some of those collected during the summer have been returned to the Park after preparation at the Philadelphia Academy of Science. A large collection of plants is now being processed at the University of Wyoming; one of each species will be returned to the park for a study collection. A collection of mammal skins and a collection of reptiles and amphibians was loaned the University of Wyoming for the use of two specialists there who are studying these groups in the state.

Employees

From May 1 to December 15 an average of four employees in addition to the Park director has been on the payroll. There has been only one full time employee, Archie Chambers, an aggressive young man native to the region who has been acting as foreman since April, 1947. From December 15, 1947 to June 1, 1948 it is expected that there will be two full-time employees.

Cooperation

Excellent cooperation in our efforts has been obtained from vari-

ous sources including the Jackson Hole Preserve, Inc., particularly. Their facilities at the Elbo, Jackson Lake Lodge, Teton Lodge and Elk Ranch have been used when necessary by the employees, guests, and researchers. The State Highway Department has helped considerably in grading work and in preparing highway signs for installation along the road, inside and outside the Park. The Wyoming Game and Fish Commission has been most helpful, in fact has assumed the burden of transporting, and in some cases, capturing live animals for the Park.

Jackson Hole Wildlife Park Film

This 16 mm. sound film of 1200 feet illustrates the area and describes the objectives of the Jackson Hole Wildlife Park. It was prepared as one of the research projects in training by personnel of Pennsylvania State College, Jackson Hole Wildlife Park, New York Zoological Society and the Wyoming Game and Fish Department.

Major Equipment

A complete inventory will not be given; the major items of equipment are as follows:

- 1 set tools
- 1 team horses and set harness
- 1 1½-ton truck (Ford)
- 1 station wagon (Ford)
- 1 pick-up truck (Ford)
- 1 gas pump and tank
- 1 hay sled
- 1 set household goods and camp beds for 12
- 1 large metal file
- 1 typewriter
- 4 specimen cases
- 1 compound microscope
- 1 acetylene welding outfit
- 1 movie camera 70 D Bell-Howell, 16mm.
- 1 still camera 4x5 Speed Graphic
- 1200 feet movie film (silent) in addition to film discussed previously.

Director's Activities

The director attended meetings to represent the Wildlife Park during the year at the following places:

- New York Zoological Society, Staff Members, New York
- International Assn. Game and Fish Commissioners, Denver
- Wyoming Stockmen's Convention, Lander, Wyo.
- Dude Ranchers' Meeting, Bozeman, Mont.
- Game and Fish Commission Meeting, Cheyenne, Wyo.

Sportsmen's Meeting, Lander, Wyo.
University of Wyoming Board Meeting, Laramie, Wyo.
One-Shot Antelope Hunt, Lander, Wyo.
Wyoming Federation of Sportsmen's Clubs, Casper, Wyo.

Visitors

It was impossible to keep a complete list of visitors or interested callers but a total of 26 outside individuals important in the field of wildlife conservation spent some time at the Park. The project was fortunate in having as cooperators during the summer some outstanding men, nationally known in their respective fields.

Publicity and Public Relations

The Wildlife Park is gaining in popularity locally. In order to give Jackson Hole residents up-to-date information on happenings at the Park a mimeographed news sheet is being planned. Notice of the plans for research of the Park appeared in four national biological journals early in the year. In general the publicity has been good but limited both locally and among conservation and scientific organizations.

Opening

Plans are being made to have a grand opening in early July, 1948. At this time of year the animals appear more presentable than earlier because they have recovered from the rigorous winter and have acquired their new coats.

Proposed 1948 Activities

A roadway must be built which will allow visitors to drive through the large enclosures. This is necessary because of the dense stand of timber which the animals favor during those parts of the day when tourist travel is heaviest. The proposed road leaves the main highway at the information booth parking area, then skirts the east side of the buffalo pasture and follows along the south fence line of the large pasture, well back so that the fence is not visible. It then turns north and follows through a series of aspen parks to join the main highway between the east cattleguard and the east parking area. It is quite possible that some clearing of timber will have to be done along this circle drive roadway. It remains to be seen after one summer's display, depending on the behavior of the animals, just how extensive the clearing must be. It is also possible that, in the

future the very heavy timber in the big pasture may have to be fenced out of use during the summer to keep the animals more available at that season.

A new laboratory building at the new headquarters site should be completed; the foundation is finished. Other developments at the headquarters should include a well, six tent houses and the installation of a light plant.

RESEARCH AND TRAINING ACTIVITIES

SUMMER 1947

C. R. CARPENTER, *Coordinator*

THE PURPOSE of this story is to report on the research and training activities of the Jackson Hole Wildlife Park during the summer of 1947. The Park Director, Mr. James Simon, has outlined elsewhere the broad plans of the organization. Briefly the central objective of the Park is to interest the people of this country in and inform them about the crucial problems of conservation through educational and research programs. The Park itself will implement this objective by providing dramatic and accessible exhibits of buffalo, elk, moose, antelope and deer in semi-natural situations. Furthermore, the Park will become an active research and training center. That the several functions of this worthwhile undertaking are closely interrelated is demonstrated by the work of about twenty individuals during the first summer.

The animal and habitat exhibits are to be realistic demonstrations of the principles of conservation. Not only is the public to be given favorable opportunities to know and appreciate the buffalo, elk, moose, antelope and deer, but also to understand the relations of these animals to the flora on which they feed. Furthermore, practical problems of managing the Park as well as wildlife management on the open range require information on the grasses, shrubs, trees, and other plants. Therefore, it was decided to undertake several botanical studies of the 1200 acre Park area before the enclosures for animals were completed and before the animals had modified the existing flora.

Frank and John Craighead, graduate students of the University of Michigan, had spent the winter of 1946-1947 in the region. It was arranged by the Park Director that they make a cover map of the area. This work involved the making of successive plant surveys during the early spring and summer months. The communities of plants or habitats were worked out and mapped to scale. In addition, standard symbols were used on the map to indicate plant successions and inter-relationships.

Dr. John F. Reed of the University of Wyoming made a systematic botanical collection during late July and August. This collection not only supplements the ground cover survey done by the Craigheads but provides specimens for the herbarium which is being built up at Park headquarters for reference and study purposes.

As with plants so it is with the indigenous small mammals. Animals of communities may be interdependent or competitive. For example, the grass-eating rodents compete for part of the same food eaten by elk, deer and antelope. Therefore, it is basically important to know what are the kinds and numbers of small mammals in the Park area before the 'normal' ecological factors are altered by the animals composing the exhibits. The botanical and mammal studies will serve as a base line with which the results of later studies can be compared.

Dr. Robert K. Enders and his group of ten assistants from Swarthmore College and Cornell University, undertook the studies of populations and habitat relations of small mammals. The field research was started late in June and continued into September. Areas and habitats of the Park were systematically trapped, small quadrat areas were laid out and the animals in them systematically trapped. In addition, studies were made both on ecological conditions in the immediate environment (micro-climatology) of small mammals as well as their metabolism. A by-product of the investigations of Dr. Ender's group is a rather complete collection of mammal skins accurately named and classified. This mammal skin collection will be used at the Park for research, reference and educational purposes.

Generally it is agreed that the study of captive wild animals should be correlated with studies of them under free-ranging naturalistic conditions. Even though some excellent field studies have been done on some of the animal types which will be exhibited — the comprehensive studies of O. J. Murie on the elk is an example — nevertheless, new interests, problems, methods and viewpoints require further observations. When the groups of animals are in their large enclosures, situations favorable for new kinds of research, especially on social behavior, will have been provided, but study of the types under free-range conditions will still be required.

It was thought desirable, therefore, to begin at once a long-term study of the ecology and behavior of the moose. Accordingly, Dr. R. H. Denniston, a physiologist of the University of Wyoming, was encouraged to start this project. He not only observed moose in the

Park area proper but also in other places where they summer in Jackson Hole and in adjacent regions. (Incidentally, Dr. Denniston studied the effects of altitude and associated ecological factors on the reproductive anatomy and physiology of fishes). Dr. Denniston will continue his moose studies this fall when it will be possible for him to collect tissue and organ specimens during the hunting season.

With the possibility in view that it may become desirable to add to the Murie studies of elk, Dr. C. R. Carpenter of The Pennsylvania State College surveyed the situation and assayed the requirements for additional systematic field studies of elk. It became clear that several years would be required and that field workers would need to live near and follow elk herds through at least one annual cycle of migration.

John and Frank Craighead had previously studied predatory birds and numerous phases of their ecology in Michigan. They proposed to conduct a similar and comparative study of the predatory birds nesting on Black Tail Butte which rises from near the center of the Valley. The Jackson Hole Summer Research Program — 1947, gladly sponsored these studies. This is in line with the policy that the Park shall be a center for research and training activities in the region. One interesting finding of the bird predator studies is that wherever predatory birds in Michigan have definite feeding territories, the same kinds of birds in Jackson Hole have common feeding grounds. The results of both the Michigan and Wyoming studies will be used for Ph.D. theses by the Craigheads.

Canada geese nest and rear young along the Snake River. Some pairs build nests on or near the ground while others build nests in trees. The water of the Snake is used for irrigation and its flow is controlled by a dam at Moran. John and Frank Craighead had already under way in the spring of 1947 a study of the nesting behavior of Canada geese and the survival of young, especially in relation to the flooding of the Snake. Systematic observations were made on nests, numbers of eggs, numbers of young hatched and their proportionate survival. The flooding of the Snake was found to be one serious cause of the destruction of nests and eggs. The study shows that with a different system of water control, destruction of geese nests and eggs can be avoided. The Society sponsored this project.

Robert L. Patterson, a graduate student at the University of Michigan, was encouraged to undertake a thorough and systematic study of the sage grouse. He began his work early in June and con-

tinued observations during the summer. Patterson was primarily engaged in preliminary survey work during the first summer. Nests, breeding birds, broods and groups of males as well as dancing grounds were spotted, mapped and observed over a wide area around the Moose Post Office. Patterson is using trained dogs to assist in population studies. In addition to a systematic study of the ecology and behavior of the sage grouse, it is expected that a documentary film will be produced on this conspicuously interesting and important game bird. During the summer the work was well advanced and the project will be continued next year. Patterson will use the data collected for his Ph.D. thesis at Michigan.

Those responsible for organizing the Jackson Hole Wildlife Park were aware of the importance of public relations from the very inception of the idea. It was believed that the initial research during the first summer might contribute constructively to the solution of a number of complex problems in the area of public relations. First, it was made clear to everyone connected with the summer's work that the activities would be watched critically by local and other interested people and that it was important to demonstrate seriousness of intent, to work hard and to make solid scientific achievements. There is no question about the kind of impressions made by the group. The work accomplished and the manner of doing this gave evidence that the Park could, and indeed was, sponsoring important research and providing unique field training opportunities for students of ecology, wildlife and behavior.

A research project on the attitudes and 'public opinion' of the people of Jackson Hole was a second activity with a close bearing on public relations. This project was planned and carried out by Dr. C. R. Carpenter and Hollis Farnum of Penn. State. The extensive personal interviews not only yielded data of value for use in making policies and plans but also the interviews served as an effective means of informing the local people about the true nature of the proposed Park. Many false rumors and erroneous beliefs were corrected. Furthermore, it was found that the interviews yielded many practical suggestions based on the peoples' considerable knowledge of wild life and conditions affecting its management and conservation. It was found that the majority of people interviewed strongly approved most aspects of the new Wildlife Park.

The same research workers carried out studies on tourists' flow through the Valley. The occupants of almost 600 cars were inter-

viewed. Ninety-four per cent (94%) of those both leaving and entering the Yellowstone South Gate expressed the judgment that they would have visited the Park had it been in operation in 1947. These data give a basis for predicting that even during the summer of 1948 the Wildlife Park will have traffic and crowd management problems of first magnitude. Public services, camp grounds and lodges will need to be rather greatly expanded.

Early in the planning stages of work for the Park the Director, Mr. James Simon, foresaw the need for a documentary film on the Park, animals and surrounding environments. Through a series of fortunate circumstances it became possible for the personnel of the Summer Research Program to carry the ball on this production. Dr. Carpenter and Mr. D. P. Duvall, a professional photographer interested in wildlife, shot about 4,500 feet of 16 mm. color film. The film when finished will give a vivid color photographic representation of Jackson Hole and the environs, of the Park area and its varied topography and plant habitats, and of the animals and birds which can be seen and photographed in the Jackson Hole region during the summer. In addition, the film will show the original conditions in the Park before the animal exhibits have been established and the activities of the initial Summer Research group. Finally, the film should be a valuable tool for public relations and education work in the hands of those who need to explain the region and the Wildlife Park to interested institutions, groups and the public.

It is believed that when the scientific and popular reports of the work of the Jackson Hole Summer Research Program — 1947 have been written, that President Osborn and the New York Zoological Society will have substantial evidence to support the wisdom of the decision to proceed immediately with research and training activities even before the animal exhibits can be established. The results also will argue strongly for wide interinstitutional cooperation. Finally, it is believed that the work done during the summer of 1947 has set a pattern for similar programs which should be carried out in the future.

COMPTROLLER'S OFFICE

HERBERT F. SCHIEMANN, *Comptroller*

THE ZOOLOGICAL PARK, being in effect a little city in itself, has most of a city's administrative problems, among them the ones connected with the handling of many hundreds of thousands of cash transactions. For example, it will be seen elsewhere in this report that throughout the year the public spends a very large aggregate sum of money on food, beverages, tractor-train and animal rides, the Children's Zoo and the other facilities we offer. Most of this sum comes to us in nickels and dimes, and the Comptroller's Office must therefore conduct a fairly wide banking operation. On a busy day this Office must act as banker for as many as thirty or forty "depositors" in the form of restaurants, carretinas and souvenir stands, tractor-train and other ticket booths. For when perhaps 80,000 people visit the Park in a single day they put a heavy strain upon our entertainment resources.

Again, the Comptroller's Office must handle many thousands of supplies transactions — not only food for the animals and their human visitors but the purchase of all the maintenance materials that keep our little village of shops in effective operation — paint, glass, lumber, roofing material, fencing, road-building material, literally thousands of items.

These activities are the day-to-day business of Park operation. They go on all the time, although of course they are greatly increased in our busy summer months when the crowds come and our payroll must be doubled to care for them. Additionally of course there are the details of handling the Society's endowment funds, membership dues and donations, and the maintenance funds provided from the City budget. Expeditions must be financed and new animals purchased.

Systems for handling this multitude of transactions set up last year have proved effective as have also the various time and labor-saving devices or equipment that have been installed. These improvements in system are certainly in large part responsible for the fact that this year we were able to work so much more efficiently.

FACILITIES DEPARTMENT

EDWARD KEARNEY, *Manager of Restaurants*

EDWARD QUINN, *Assistant Manager*

1947 has been another successful year for the Facilities Department. A great part of the record is attributable to the rush-season service staff of about 260 persons who had a major part in its operations.

The boating operation has profited by the purchase of fifty new row boats early this summer. Last fall an order was placed for fifty new round bottom metal row boats with delivery expected sometime this winter.

New equipment has been added to the commissary operation. This includes one large walk-in ice cream freezer with a capacity of two thousand quarts, one new one-ton International truck with metro body and a two section gravity roller. These facilities proved to be not only labor and time saving but also helped enormously in the servicing of the Restaurant, Carretina Wagon and Service Stand installations. Twenty new picnic tables were added adjacent to the Picnic Pavilion. The tables have contributed greatly to the convenience of the visitors who desired basket party accommodations.

A restaurant employee training program was developed early in 1947 for the several types of positions and for methods of preparation and dispensing of restaurant products. A three page illustrated mimeographed booklet was distributed and periodical employee meetings were held and techniques of job instructions, relations and methods were discussed. This program was a decided factor in elevating the morale of the restaurant employees, thus raising both the standards of performance and spirit of service. Included in the training program are twenty-four photos taken in the commissary kitchen by the Society photographer. These photos supply a visual explanation in regard to the various stages necessary in the proper preparation of salads, sandwiches and by-products. The showing of slide-film with commentary covering the proper method of coffee making and a slide-film with commentary covering the various methods in proper soda fountain service and operation proved to be highly educational.

This program is the beginning of an extensive employee job relations program being developed by the Society.

CONSTRUCTION AND MAINTENANCE

QUENTIN MELLING SCHUBERT, *Superintendent*

AMONG the major projects completed by this department during the past year, outstanding in interest, as well as in requirements, was the design and construction of the Platypusary. This exhibit was planned and constructed on preliminary information obtained from Australia. However, numerous changes proved necessary after the arrival of the Platypus, due to their extreme sensitivity. To meet their food requirements a farm for raising worms was built in the basement of the Lion House.

In the Small Mammal House, finishing work, including interior work on cages, stone work and pools, was completed during the spring. In conjunction with the remodelling of this building, the east outside cages have been redesigned, bids received, and the work will go forward to completion before the 1948 spring opening.

The Bird Rock Exhibit, using the natural rock formation on the site of the former Wolf Dens, was landscaped with waterfall, pools and planting, and completely fenced in.

Reconditioning of the former Moose Corral and Shelter was followed by the construction of an additional needed feeding corral, shelter and food storage building.

Fifteen hundred linear feet of wire fence were replaced and all steel posts replaced or reinforced in the Elk Range fence for the protection of the newly acquired herd from Jackson Hole.

During 1946, the large doors leading from the Elephant House to the southwest corral were replaced, and this year the doors to the southeast corral have been found rotted and unfit. New doors, weighing more than 1,200 pounds each, have been constructed and these will be hung in place when warm weather permits.

The south cage of the main Bear Dens was reconditioned and a shift cage constructed to facilitate maintenance operations for this cage now housing the large Polar Bear. The main Polar Bear Cage has been repaired, strengthened and painted to provide larger quarters for the four new animals.

The library on the second floor of the Administration Building

has been completed and made ready for occupancy.

To provide living quarters for the four animal behavior research workers who spent the summer studying at the Zoo, the old lecture hall was renovated, and shower and lavatory installed.

After the close of their season, the tractor trains were entirely dismantled, and the engines and bodies are being completely overhauled and reconditioned by our shops during the winter months.

Exhibits were constructed for the Sportsmen's Show and also for the Annual Meeting of the Society.

During the past year extensive planting has been done throughout the Park, and in anticipation of necessary removal of numerous trees, about fifty new trees are being planted annually.

The lesser but ever necessary tasks of renewing and repairing fences, cages and equipment go on regularly. Due to the age of many of our structures and subsurface drainage and water lines, these problems are steadily increasing in number and scope.

Replacements and additions of the following items as they became available, helped considerably in operations and maintenance—

One water road flusher and sprinkler with snow plow attachment.

Two food delivery trucks.

Two dump trucks.

Three pick-up trucks (for shop use).

Authorized purchase of an additional large truck for restaurant food delivery, and replacements for worn out Crosley automobiles will expedite the work of this and other departments.

DEPARTMENT OF EDUCATION

HERBERT J. KNOBLOCH, *Associate in Charge*

ANNE Y. ORTH

THE QUESTION HOUSE opened its doors to the public for the 1947 season on April 26. It closed on November 11. During the approximate 6½ months this service to the public was in operation, 53,805 people passed through its doors and 17,073 questions were asked the five members of the department staff in attendance. Of this total, 4,350 were directional in nature.

It may be noted here that the attendance for this year was lower than that of last year but that the total number of questions asked was almost doubled. Several factors may have been responsible for the decrease in attendance, one of which was undoubtedly the later opening of the building — 1 p.m. instead of 11 a.m. The surprisingly large increase in questions asked may be in part more apparent than real, because of more efficient recording.

The busiest month was July with a total attendance of 10,996 visitors and 3,677 unduplicated questions asked. The biggest single day was Memorial Day, with 1,750 persons visiting the building and 430 different inquiries being made. Telephone inquiries totaled 124, and 87 letters requesting information were received addressed to the Question House. Of all the questions asked, 178 required research. These, of course, were answered by mail. Among the letters were two from the same individual; the first contained 41 questions and the second 83 questions, most of them in several parts!

The Question House provided information for CBS, *Time*, *Field and Stream*, *Life*, *Readers' Digest*, *Coronet*, *New Yorker* and *Vogue* Magazines.

Sales of natural history books and Society publications totaled \$952.60.

The indexed card file of questions asked at the Question House and also those received by mail has been completely revised. Wherever possible the answers to the questions have been recorded directly on the card with reference sources quoted in addition.

A file containing statistical information about animals has been

started. It will contain detailed information about animals in which people seem to be most interested, such as classification, food, habitat, size, weight, speed, span of life, gestation period, number of young, and size when born.

According to earlier experience more questions are asked about the elephant than about any other animal, but such was not the case this year. If the number of inquiries about a particular animal is still indicative of its popularity, then the Platypus far exceeds any other animal in the collection in this respect at present. Since their arrival in April 2,479 questions were asked about them. The Tarsiers ranked second with 279 inquiries during a 3½ month period.

The department assisted in the operation of the Platypusary by running a public address system and directing the crowds.

During the year, 150 guided tours were conducted for 4,770 persons. Twenty-three "Behind-The-Scenes" tours for members of the Society were given. Many special tours of the Zoological Park were conducted for school groups and organizations, in conjunction with special study programs and projects in which they were participating. Tours were conducted for a group of Latin American Exchange Students sponsored by the New York *Herald Tribune*, the Queensboro Shelter of the Society for the Prevention of Cruelty to Children, foreign graduate students from the International House at Columbia University, the Camera Club of the New York Athletic Club, graduate students (biology teachers) of the School of Education, New York University, anthropology students from Columbia University, incapacitated children from the St. Charles Hospital for Crippled Children in Brooklyn, the Biology Club of Hunter College, and students in the Department of Nursing of Columbia University School of Medicine. A special tour of the Farm-in-the-Zoo was conducted for a group of blind children from the New York Institute for the Education of the Blind. The initial request for this tour was written in Braille by one of the children. Members of the department also assisted with special tractor train tours given for the New York State Chamber of Commerce, the Parents' League, Kiwanis Club and the Conservation Conference group of educators.

Miss Ruth Dauchy's illustrated lecture service to public and private schools is still very popular and in great demand. Her schedule is always completely full. At the end of 1947, 108 requests had been received for the winter season. Many letters of appreciation and commendation regarding her visits have been received. A

European hedgehog and a kinkajou were used in addition to the skunk, rooster and Kodachrome slides used to illustrate her talks.

Special organizations visited by Miss Dauchy included the Hartford Children's Museum in Connecticut, the New York School for the Deaf in White Plains, Stryker's Lane Community Center for underprivileged children, and the Motor Disabilities Clinic School at Neurological Institute. She also visited such groups as the Saturday Afternoon Club of Walt Whitman School, the Madison Square Boys Club, the Knickerbocker Greys, and the Montclair Area Girl Scout Council, Inc.

The totals for Miss Dauchy's visits in 1947 were:

	<i>Number Visited</i>	<i>Number Talks</i>	<i>Attendance</i>
Public Schools	28	61	8,110
Private Schools	22	74	2,525
Other Groups and Organizations.....	6	40	2,255
Totals	56	175	12,890

Department members participated in seven radio broadcasts and gave twenty-three lectures illustrated with films and specimens before a variety of organizations and audiences totaling 3,129 people.

Visiting school groups numbered 1,264, including 1,538 classes and 62,270 persons.

Messrs. Amos and Knobloch assisted with the maintenance and operation of the Society's exhibit at the National Sportsmen's Show at Grand Central Palace.

An article by Mr. Amos about the activities and services of the Question House was published in the March issue of *Parks and Recreation*. To answer the many inquiries about the keeping of American Chameleons as pets, mimeographed instructions on the care and feeding of this animal was prepared for free distribution. A short bibliography of natural history books for free distribution was also prepared at the requests of parents and teachers.

A booklet on the Question House was prepared for sale by Mr. Amos. It contains pictures of the murals, descriptive material and a set of twenty questions and answers. The department also compiled data for an Education Series booklet on the Platypus.

Several schools were visited by members of the department in an advisory capacity, to aid in the establishment and setting up of nature rooms. A private school was visited and a conference held to determine what type of educational program would be of interest

to private schools and what the department could do in regard to educational activities and services for private schools.

This year 236 of our films were shipped out on a rental basis to schools, various other organizations and members of the Society, and were viewed by 55,129 persons. The rental return for the year was \$499.73. The Interim Listing of the Society's films, completed last year, was considerably revised.

We are now engaged in creating a library of 35 mm. color slides of animals. The first set to be completed will be "Mammals of Africa."

Several staff changes occurred during the year. Miss Myrtice Blatchley left the employ of the Society in March. Mr. Amos resigned in August to accept a teaching position in Delaware.

PUBLICATION AND PHOTOGRAPHY

WILLIAM BRIDGES, *Curator*

SAM DUNTON, *Photographer*

IN SHEER volume of work accomplished, there has never been a year in the history of the Society's Photographic Section to compare with 1947. No less than 1,010 negatives were added to the collection, most of them taken by Staff Photographer Dunton and a few by his assistant, Helen Clasen. This is at the rate of almost three negatives a day throughout the whole year, and when it is remembered that some animal photographs require hours of preparation and stage-setting, the effort involved in obtaining such a total is truly impressive.

Not all the 1,010 negatives were animal pictures, of course; we attempt reasonably complete picture coverage of miscellaneous activities around the Zoological Park — work in progress, storm damage, crowd conditions, new construction and the like. Nevertheless the bulk of the new photographs were animal shots, and they kept the Photographic Section busy.

Among the new pictures were 92 2 x 2 color slides made for the Education Department with a new Kine Exacta camera acquired during the summer. These were only a beginning on what we expect to make a most complete record in color of the major mammals, birds and reptiles in the collection. The demand for pictures in color by artists, magazines and book publishers is constantly increasing and although the slides are made primarily for use by schools, they will serve an important secondary purpose to publishers.

Two of the most interesting and entertaining motion pictures we have ever made are "Baby from Borneo," a record in 16 mm. color of our young Orang-utan, and "Strangers from Afar," a record of animal rarities received at the Zoological Park during the year. These were made with the Annual Members' Meeting of the Society particularly in mind, but are of such quality that with slight editing they can be made available to schools and other groups during the spring.

The Zoological Park's Printshop, which has responsibility for

printing all animal labels up to 12 x 18 size, added new type to its equipment, and now has practically complete fonts of Garamond and Franklin Gothic, in sufficient quantities to handle any labels within the size limits of its presses.

Comparatively little miscellaneous printing was produced by the department last year, sufficient supplies of most of our booklets having been printed in 1946 to carry through. We did turn out two issues of "Speaking of Animals" for the Membership Department, a booklet, "The Platypus and the Echidna" for the Education Department, and one or two small promotional jobs for Membership.

Our staff photographer gave fifteen talks, mostly to camera clubs.

We report with sorrow the death on December 19, of Elwin R. Sanborn, first editor of the Society's publications and its official photographer from the opening of the Zoological Park in 1899 until his retirement at the end of 1934. He was one of America's great animal photographers and the founder of our present unrivalled collection of animal negatives.

Twenty papers by members of the staff and others were published in *Zoologica*, the quarterly parts of the journal totalling 180 pages. Volume 32 contained the following:

PART 1. MAY 8, 1947

1. Development of the platyfish, *Platypoecilus maculatus*. By William N. Tavolga and Roberts Rugh. Text-figures 1-25.
2. A study of the oxygen consumption of blind and eyed cave characins in light and darkness. By Sylvia R. Schlagel and C. M. Breder, Jr. Text-figures 1 and 2.
3. Evidence for the lack of a growth principle in the optic cyst of Mexican cave fish. By C. M. Breder, Jr. and Priscilla S. Rasquin. Text-figures 1 and 2.
4. Progressive pigmentary regression in fishes associated with cave environments. By Priscilla S. Rasquin. Plate I; Text-figure 1.
5. Ecology of Rancho Grande, a subtropical cloud forest in northern Venezuela. By William Beebe and Jocelyn Crane. Plates I-V; Text-figures 1-10.
6. Two new pseudoscorpions of the subfamily Lamprochernetinae from Venezuela. By C. Clayton Hoff. Text-figures 1-5.
7. A list of mammals collected at Rancho Grande, in a montane cloud forest of northern Venezuela. By G. H. H. Tate.
8. A new species of Hesperidae (Lepidoptera, Rhopalocera) from Venezuela. By Ernest L. Bell. Text-figure 1.

PART 2. JULY 31, 1947

9. Eastern Pacific expeditions of the New York Zoological Society. XXXVIII. Intertidal brachygnathous crabs from the west coast of tropical America with special reference to ecology. By Jocelyn Crane. Text-figures 1-3.

10. The external genitalia of the gorilla, *Gorilla gorilla gorilla*. (Savage & Wyman). By Leonard J. Goss. Plates I-IV.
11. Spontaneous neoplasms in fishes. III. Lymphosarcoma in *Astyanax* and *Esox*. By Ross F. Nigrelli. Plates I-XI.
12. Notes on the hercules beetle, *Dynastes hercules* (Linn.), at Rancho Grande, Venezuela, with special reference to combat behavior. By William Beebe. Plates I-IV.

PART 3. NOVEMBER 12, 1947

13. Notes on ectoparasites from Venezuela (Siphonaptera and Acarina). By Irving Fox. Text-figures 1 and 2.
14. Preliminary studies of the effects of sulfonamides on fish and *Bacterium salmonicida*. By Walter L. Smith and Ross F. Nigrelli.
15. *Nocomis* nests used by other breeding cyprinid fishes in Virginia. By Edward C. Raney. Plate I.
16. Sphingidae (moths) of Rancho Grande, north central Venezuela. By Henry Fleming.
17. Scale adaptation and utilization in *Aesiocopa patulana* Walker (Lepidoptera, Heterocera, Tortricidae). By William Beebe. Plates I and II; Text-figures 1 and 2.

PART 4. DECEMBER 29, 1947

18. Avian migration at Rancho Grande in north-central Venezuela. By William Beebe. Plate I; Text-figure 1.
19. *Endosphaera engelmanni* endoparasitic in *Trichodina spheroidesi* infecting the puffer, *Sphoeroides maculatus*. By Morton Podnos and Ross F. Nigrelli. Plates I and II; Text-figures 1 and 2.
20. Ithomiinae (Lepidoptera) of Rancho Grande, Venezuela, including two new species. By Richard M. Fox and Jean W. Fox. Plate I.

ANIMAL KINGDOM was published in the six regular numbers. Volume L totalled 200 pages.

VARIED OPERATIONS AND SERVICES

Children's Zoo

The Children's Zoo closed on November 16, having completed its 7th season. Total attendance was 322,966. In spite of rainy weather in August and September, two of our best months, this total lacked only 2,294 of equalling the record of 1946.

Farm-in-the-Zoo

Another year passed during which it was impossible to have the Farm open to the public because of parkway construction adjacent to the Farm. However, stock was maintained in anticipation of the time the exhibit can be reopened and the following produce obtained:

Wool	132 pounds
Lamb	104 pounds
Pork	1445 pounds
Eggs	858 dozen
Poultry	1117 pounds

Ninety-one dozen eggs from the Farm were consumed by the Platypuses as egg custard. The balance of the eggs and the other produce was used in the Facilities Department Commissary. Certain Children's Zoo stock was wintered at the Farm.

Riding Tracks

Again the Pony Track set an all-time record with 248,997 rides, an increase of 3.16% over last year in face of a slight general decrease in Park attendance. The Pony Track is now doing over 100,000 more rides each year than it did in the years previous to 1944. Weather permitted the Track to operate 275 days.

The Animal Riding Track accommodated 169,644 children, as compared with 168,144 during 1946. Three young Dromedaries, recently imported, have now been obtained and it is hoped that the service of this popular Facility will be greatly increased.

MEMBERSHIP AND FUND NEEDS

DONALD T. CARLISLE, *Chairman Membership Committee*

THE SOCIETY'S Fund-Membership office, established July 1, 1946, has been in operation throughout the past year — for the first six months as a membership organization, swinging over to a fund campaign staff on July 1 in anticipation of the Aquarium Fund drive.

Momentum generated in the fall of 1946 carried over well into the spring of this year, and the Society gained 942 new Annual and thirty-five new Life memberships in the first half of 1947 — by far the biggest increase for any six-month period in our history. As anticipated, the influx of members began to slow down in July and continued at a minimum rate throughout the summer months.

On July 1 the membership office staff was reorganized as the Aquarium Fund office, and all effort was shifted to the Aquarium drive plans in the expectation that the Aquarium contract might have the approval of the Board of Estimate as early as at its September meeting. While these plans have been tabled because of the fact that no action has as yet taken place, we are happy to report that our preliminary surveys show a most substantial interest in the Aquarium on the part of the public, and we believe that when this can be made an active project a successful drive for this fine new institution can be conducted.

Our plans in the Aquarium's behalf called for the making of a promotional motion picture. This has been made but will not, of course, be released until the Aquarium drive is formally undertaken. For purposes of this film one overall model of the magnificent new building was constructed together with several models of the Aquarium's interior. These are housed now at the Park awaiting the opening of the campaign when they will be available for display throughout the city. Although a substantial budget was voted for the preliminary work of the Aquarium drive, only the motion picture, the models and a sign erected on the site of the new building have been completed.

While the Aquarium campaign plan was drifting along from month to month, membership promotion was in abeyance, it having

been our intent to merge the membership activity with the Aquarium campaign. Consequently membership gains were slight until late October when we again sent an invitation to our prospects in the Greater New York area. Membership immediately picked up again and your Society finished 1947 with a gain of 1,249 Annual and forty Life members.

There is no reason that we can now see to prevent the Society's having an eventual Annual membership of 10,000. There are several reasons why such a number is desirable. Your Society through its wide field of activities has become an international organization. It needs the moral support of a very much larger body than it has had in the past, and it can reasonably justify the interest of many more members. Again, the dues from membership can be made to have a most favorable bearing on the Society's finances. When our membership was approximately only 1,000 or so and all bills for dues were issued in the month of January, the revenue from members was collected in the early months of the year and was used virtually entirely to defray the cost of membership privileges. As membership has increased the cost of privileges per member has naturally become less so that a small margin remains for the Society's general purposes. If the membership is materially increased — say from its present total of 3,576 to 7,500 or 10,000 — the Society can reasonably count on a substantial sum to help our work. It is therefore our plan to drive ahead for membership since it is increasingly apparent that any such organization as this must broaden the base of its support if it is to persist and make progress.

With this thought in mind, we have been considering some modification of our membership structure. On the basis of the inquiries which we have had, we believe that a Contributing Membership at \$25 a year should be instituted and it has so been done. There is ample precedent for such a membership classification. We plan to make some further investigation of the possibilities of a School Membership. We have more and more to offer the private schools and several of these have asked whether they could join as such. If upon investigation there seems to be an opportunity for us to develop such a support we would hope later to develop such a membership class.

Thus by increasing the present classes of Annual and Life Memberships, and by adding Contributing and School Memberships it seems reasonable to suppose that the Society can materially increase

its revenues for the benefit of everyone. We would be able to improve our publications in many ways, add some new privileges and render an altogether better service to all members. We would presumably still have a balance in our membership account for the building up of our Educational Department, for conservation, research or any other of the Society's general purposes.

It is wholly desirable that the Society's membership be increased and maintained because of its financial bearing on the Society's activities.

Other Fund Activities

We have held a small staff together for the Aquarium drive when, as and if it materializes. Plans for this drive have been made and, while it would require several months to develop the necessary details, the general program can be said to be substantially ready for execution.

Additionally, considerable work has been done towards laying the foundation for financing the Conservation Division of the Society which was founded early in the year. An operating budget for this Division was set up from general and other revenue sources sufficient to carry it through to December 31 without outside support. The Division has completed its work schedule for the next three years and it will require a substantial amount over and above the Society's direct contribution to carry on this Division as planned. This added support however is not currently expected to come from membership in general. We are seeking it from certain foundations and individuals known to have a direct interest in conservation, and at this moment we can report only that our prospects are most encouraging and that the project would seem to be assured.

The Modernization program at the Park has been tabled to give priority to the Aquarium and the Conservation campaigns which can be conducted simultaneously without conflict. It is probable that no strong attempt will be made to put the Park plan into execution until these other goals have been achieved, and until such time as building costs are more favorable.

Meanwhile the Society will be forging ahead to increase the knowledge and appreciation of our work among the people who should know about us. We are preparing a program to promote this end and, as in the past, it will be shared by all our membership so that they may be kept informed.

SUMMARY OF ATTENDANCE

ZOOLOGICAL PARK

<i>Month</i>	<i>1947</i>	<i>1946</i>
January	95,230	49,710
February	66,677	81,523
March	152,796	269,725
April	310,541	333,646
May	312,670	280,501
June	340,501	306,462
July	363,064	346,934
August	316,854	350,420
September	266,943	358,144
October	238,876	197,979
November	128,223	131,236
December	39,846	61,137
	<hr/>	<hr/>
	2,632,221	2,767,417

Total visitors from November 9, 1899,
to December 31, 1947..... 101,981,188

TREASURER'S REPORTS

For the Year Ended December 31, 1947

CORNELIUS R. AGNEW, *Treasurer*

630 Fifth Avenue

New York 20, N. Y.

BALANCE SHEET

As at December 31, 1947

(Except for income on investments which is accounted for in the year received, this balance sheet is prepared on an accrual basis.)

ASSETS

Cash:			
In Banks	\$	185,290.49	
In Bank — Segregated		6,372.63	
On Hand		2,664.90	\$ 194,328.02
Accounts Receivable from the City of New York:			
Appropriations for Zoological Park Maintenance — calendar year 1947	\$	480,432.64	
Less — Amount Received		412,692.40	67,740.24
Other Receivables			2,755.03
Inventories			38,183.80
Investments — At cost, market value at acquisition, or nominal amounts:			
	<i>Approximate market</i>		
Bonds	\$1,798,031.06	\$1,976,223.37	
Preferred Stocks	1,129,937.75	1,143,170.27	
Common Stocks	2,362,629.75	2,064,693.86	
Miscellaneous	—	3,145.18	
	<u>\$5,290,598.56</u>		5,187,232.68
Park Facilities Assets—Less depreciation (Note 1):			
Improvements to land and buildings in Zoological Park	\$	54,576.22	
Equipment and miscellaneous items		33,240.10	87,816.32
Prepaid Expenses and Deferred Charges			3,801.81
National Collection of Heads and Horns, Art Gallery, Library and Sundry Items			1.00
Collection of Living Animals			1.00
			<u>\$5,581,859.90</u>

LIABILITIES

Accounts Payable:

For operating and other purposes.....	\$	26,406.07	
For modernization program — architects fees		<u>62,314.67</u>	\$ 88,720.74

Accrued Salaries 1,323.27

Reserve for Educational and Other Purposes.. 34,562.90

Fund Reserves:

General and other invested funds.....	\$4,943,318.92	
Park Facilities operating fund (Note 1) ..	209,794.11	
Special and custodian funds.....	<u>304,139.96</u>	5,457,252.99
		<u>\$5,581,859.90</u>

- NOTES: 1. Park Facilities assets are subject to an agreement with the City of New York, and the net income from Park Facilities operations may be used only for the purchase of animals and the improvement of Zoological Park.
2. This balance sheet does not include the assets and liabilities of the Pension Fund.
3. This balance sheet does not include the value of additional securities and/or cash, estimated to approximate \$750,000.00, to be received by the Society from the Estate of Mary Clark Thompson. Income from these assets, however, was received by the Society during the year 1947 and has been included in its income for that year.

GENERAL AND OTHER INVESTED FUND RESERVES

As at December 31, 1947

General Invested Fund Reserves:

General Fund	\$ 375,485.85	
Anna M. Harkness Fund.....	996,964.65	
Rockefeller Fund	945,150.38	
Sage Fund	618,323.36	
George F. Baker Fund.....	102,226.37	
Jacob H. Schiff Fund.....	99,857.18	
Mary Thurston Cockcroft Fund.....	24,365.24	
Florence Lydig Sturgis Fund.....	18,437.26	\$3,180,810.29

Estate of Mary Clark Thompson.....		* 1,715,910.62
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Total General Invested Fund Reserves		\$4,896,720.91
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Other Invested Fund Reserves:

Cadwalader Animal Fund.....	\$ 18,634.60
Stokes Bird Fund.....	4,687.69
Grant Fund for the Protection of Wild Life	23,275.72

Total Other Invested Fund Reserves	46,598.01
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	<u>\$4,943,318.92</u>
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*These funds are exclusive of the value of additional securities and/or cash, estimated to approximate \$750,000.00, to be received by the Society from this estate.

SPECIAL AND CUSTODIAN FUND RESERVES

As at December 31, 1947

William E. Damon Fund.....	\$ 11,563.25
DeForest Grant Scientific Research Fund.....	3,180.66
Laurance S. Rockefeller — New Aquarium or Jackson Hole Wildlife Park Inc. Program.....	155,227.39
Animal Account	7,396.24
Conservation Account	26,843.44
Conservation Films Program.....	1,238.21
Conservation Foundation	14,266.90
Improvement and Repair Account.....	6,237.00
Membership and Fund Campaign.....	52,742.18
National Cancer Institute.....	7,717.97
Park Improvement Account.....	6,585.46
Revolving Publications Account.....	2,130.41
Special Projects Account.....	9,010.85
	<hr/>
	\$304,139.96

GENERAL FUND

For the Year Ended December 31, 1947

Balance — December 31, 1946.....		\$ 540,678.06
Add:		
Gifts:		
C. Suydam Cutting.....	\$ 3,000.00	
George A. Eddy and C. Russell Eddy, residuary legatees of the Estate of Marie L. Russell.....	100.00	
Mrs. Childs Frick.....	500.00	
Peter Grimm	200.00	
Warren Kinney	2,500.00	
Samuel Kress Foundation.....	100.00	
David H. McAlpin.....	3,000.00	
John H. Phipps.....	5,000.00	
George N. Richard.....	2,120.00	
Anne E. Rogers.....	500.00	
Hubert E. and Anne E. Rogers Foundation, Inc.	500.00	
Mrs. Magda Sheldon.....	100.00	
J. Watson Webb.....	5,125.00	
Other gifts of \$10.00 or less (17)...	115.00	
Legacies:		
Estate of Mary Clark Thompson....	*1,715,910.62	
Estate of William Williams.....	2,500.00	
Life Memberships	9,700.00	
Pro-rata Share of Net Profit on Sales and Redemptions of Securities.....	442.72	
Proceeds from Sale of Trucks and Office Equipment	571.50	
Transfer of Architects Fees — Zoological Park to Park Improvement Account..	13,336.00	1,765,320.84
	(forward)	\$2,305,998.90

	(forward)	\$2,305,998.90
Deduct:		
Appropriations for Membership and Fund Campaign	\$ 149,563.19	
Appropriation for Conservation Film Program	15,000.00	
Appropriation for Furnishing and Equipping Conservation Division Office...	2,000.00	
Appropriation for Floor Covering, Administration Building	1,031.00	
Appropriation to Jackson Hole Wildlife Park (1/3 of \$40,000.00 to be paid in each of three consecutive years commencing January 1, 1947).....	13,333.33	
Appropriation of 1946 income account balance to reserve for educational and other purposes	2,878.27	
Compensation to Choate, Mitchell & Ely — aquarium contract	3,500.00	
Purchase of motor equipment and office machines	11,811.64	
Architects fees — aquarium	15,485.00	214,602.43
Balance — December 31, 1947.....		<u><u>\$2,091,396.47</u></u>

*The assets represented by these funds are being kept separate and apart pending the final accounting of this estate. These funds are exclusive of the value of additional securities and/or cash, estimated to approximate \$750,000.00, to be received by the Society from this estate.

GENERAL INCOME ACCOUNT

For the Year Ended December 31, 1947

Income:

Income from investments — general invested funds			\$235,048.07
Annual dues			29,889.91
Sales of publications.....			3,416.11
Miscellaneous income			1,318.83
Total income			<u>\$269,672.92</u>

Appropriations:

From Society conservation account for conservation activities	\$	6,500.00	
From Society reserve for educational and other purposes:			
For conservation activities...	\$3,691.08		
For general expenses applicable to 1946.....	2,315.84	6,006.92	12,506.92
Total			<u>\$282,179.84</u>

Expenses:

Actuarial fee	\$	328.63
Annual report		2,576.59
Aquarium research		1,672.07
Audit fees		1,800.00
Conservation		41,191.08
Custodian fees		2,649.50
Donations		125.65
Educational activities		10,624.96
Employee welfare		1,678.86
Executive office		18,634.30
Insurance		5,265.30
Legal fees		2,840.77
Library		690.03
Members — meetings and services.....		10,963.65
(forward)	\$	101,041.39

	(forward)	\$ 101,041.39	
Pensions:			
Fund contribution — four percent on salaries of members.....		15,751.26	
Auxiliary payments		7,998.99	
Photography — salaries and supplies.....		6,590.72	
Publication expense		31,924.74	
Reception expense		1,086.87	
Traveling expense		1,482.59	
Tropical research		15,913.83	
Contingencies		369.83	\$182,160.22
Park Maintenance Expenditures for the Year 1947		\$564,281.03	
Less — amount provided by New York City for park maintenance expenditures for the calendar year 1947.....		480,432.64	
Park maintenance expenditures provided by New York Zoological Society...			83,848.39
Balance Carried to Reserve for Educational and other purposes			16,171.23
			<u>\$282,179.84</u>

GIFTS, GRANTS AND LEGACIES

Received During the Year 1947

The American Committee for International Wild Life Protection

Childs Frick	\$	800.00
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Cancer Research

American Cancer Society Fund.....	\$	1,250.00	
National Cancer Institute.....		15,068.00	16,318.00

Conservation Account

Anonymous	\$	1,500.00	
Childs Frick		5,500.00	7,000.00

Conservation Foundation

Childs Frick	\$	5,000.00	
Archer M. Huntington.....		5,000.00	
Merrill, Lynch, Pierce, Fenner & Beane.....		400.00	
Howard Phipps		5,000.00	
Edgar B. Stern.....		100.00	15,500.00

DeForest Grant Scientific Research Fund

DeForest Grant		3,000.00
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General Fund

C. Suydam Cutting.....	\$	3,000.00	
George A. Eddy and C. Russell Eddy, resid- uary legatees of the Estate of Marie L. Russell		100.00	
Mrs. Childs Frick.....		500.00	
Peter Grimm		200.00	
Warren Kinney		2,500.00	
Samuel Kress Foundation.....		100.00	
David H. McAlpin.....		3,000.00	
John H. Phipps.....		5,000.00	
George N. Richard.....		2,120.00	
Anne E. Rogers.....		500.00	
Hubert E. and Anne E. Rogers Foundation, Inc.		500.00	
Mrs. Magda Sheldon.....		100.00	
Estate of Mary Clark Thompson.....	*	1,715,910.62	
J. Watson Webb.....		5,125.00	
Estate of William Williams.....		2,500.00	
Other gifts of \$10.00 or less (17).....		115.00	1,741,270.62

(forward)

\$1,783,888.62

(forward)

\$1,783,888.62

New Aquarium or Jackson Hole Wildlife Park, Inc. Program

Laurance S. Rockefeller..... 84,375.00

Special Projects Account

Anonymous	\$	100.00	
Emily Buch		25.00	
Arthur H. Dean.....		25.00	
Gilbert W. Kahn.....		100.00	
Mrs. Martha Mercer.....		100.00	
Mrs. Charles Pierre.....		50.00	
Frederick Sturges, Jr.....		10.00	
Allen Wardwell		100.00	
Other gifts (2).....		10.00	520.00

Special Study in Comparative Psychology

Rockefeller Foundation 1,000.00

General Fund Reserves

Estate of Mary Thurston Cockcroft.....	24,365.24
	<u>\$1,894,148.86</u>

*This amount is exclusive of the value of additional securities and/or cash, estimated to approximate \$750,000.00, to be received by the Society from this estate. Income from such assets, however, was received by the Society during the year 1947 and has been included in its income for that year.

PARK FACILITIES BALANCE SHEET

As at December 31, 1947

ASSETS

Cash	\$ 2,000.00
Other Receivables	486.16
Inventories	38,183.80
Park Facilities Assets (Less Depreciation) (see note).....	87,816.32
Prepaid Expenses and Deferred Charges.....	738.03
Due from Society.....	82,523.77
	<u>\$211,748.08</u>

LIABILITIES

Accounts Payable	\$ 1,797.37
Accrued Salaries	156.60
Fund Reserves:	
Park Facilities Operating Fund — (See Note).....	209,794.11
	<u>\$211,748.08</u>

NOTE: Park Facilities Assets are subject to an agreement with the City of New York, and the net income from Park Facilities operations may be used only for the purchase of animals and the improvement of Zoological Park.

PARK FACILITIES
STATEMENT OF INCOME AND EXPENSE AND PARK
FACILITIES OPERATING FUND
For the Year Ended December 31, 1947

Receipts from Sales at Stands, Restaurants, etc., and from Services.....		\$691,668.31
Cash Discounts		<u>2,610.45</u>
		\$694,278.76
Less:		
Cost of Merchandise sold	\$237,379.50	
Salaries and Commissions	258,839.15	
Depreciation	11,323.57	
Other Operating and General Expenses	<u>69,609.82</u>	<u>577,152.04</u>
Net Income for Year from Sales at Stands, Restaurants, etc., and from Services— (See Note)		\$117,126.72
Balance of Park Facilities Operating Fund — December 31, 1946.....		<u>247,667.39</u>
		\$364,794.11
Deduct:		
Appropriations for Park Improvements	\$105,000.00	
Appropriations for the Purchase of Animals ..	<u>50,000.00</u>	<u>155,000.00</u>
Balance of Park Facilities Operating Fund — December 31, 1947.....		<u><u>\$209,794.11</u></u>

NOTE: Park Facilities Assets are subject to an agreement with the City of New York, and the net income from Park Facilities operations may be used only for the purchase of animals and the improvement of Zoological Park.

PERMANENT WILD LIFE PROTECTION FUND
BALANCE SHEET

As at December 31, 1947

Cash — Principal Funds	\$ 780.81
(Held by the New York Zoological Society)	
Investments — at book value	123,029.09
(Quoted market or redemption value — \$133,246.25)	
	<hr/>
Amount of Fund — December 31, 1947	<u><u>\$123,809.90</u></u>

THE PENSION FUND

(Founded by Andrew Carnegie)

Statement of Operations for the Year Ended December 31, 1947

Balance as at December 31, 1946:

Investments (Quoted market or redemption value — \$625,935.50)	\$606,303.39
Uninvested Balance of Cash.....	<u>5,667.85</u>
	\$611,971.24

Receipts:

Income from Investments:		
Interest	\$ 11,358.33	
Dividends	13,323.00	
Contributions by New York Zoological Society Employees (Three percent of Employee Salaries)	14,123.89	
Contributions by New York Zoological Society (Four percent of Employee Salaries)	<u>18,831.88</u>	<u>57,637.10</u>
		\$669,608.34

Expenditures:

Refunds on Account of Resignations	\$ 2,909.55	
Pension Disbursements	26,252.65	
Refunds on Account of Death	<u>2,213.36</u>	<u>31,375.56</u>
		\$638,232.78

Loss (Net) on Sale and Redemption of Investments	<u>47.49</u>
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Balance as at December 31, 1947:

Investments (Quoted market or redemption value — \$626,171.50)	\$625,261.06
Uninvested Balance of Cash	<u>12,924.23</u>
	<u>\$638,185.29</u>

BARROW, WADE, GUTHRIE & CO.

ACCOUNTANTS AND AUDITORS

120 Broadway

New York 5, N. Y.

ACCOUNTANTS' REPORT

THE BOARD OF TRUSTEES, New York Zoological Society,
New York, N. Y.

We have examined the balance sheet of the New York Zoological Society as at December 31, 1947, and statements of the transactions of the various funds of the Society and of the Pension Fund for the year then ended, have reviewed the system of internal control and the accounting procedures of the Society and, without making a detailed audit of the transactions, have examined or tested accounting records of the Society and the Pension Fund and other supporting evidence, by methods and to the extent we deemed appropriate. Our examination was made in accordance with generally accepted auditing standards and included all procedures which we considered necessary in the circumstances.

We made a test check of the subscriptions, donations and dues reported as received and of the income from investments and found such items to be properly recorded. We compared schedules and other supplementary data, prepared by the custodians, of securities held by them for the account of the Society with the securities recorded in the funds of the Society and found them to be in agreement. Bank balances were confirmed directly to us by the depositaries and were reconciled with the respective cash balances recorded in the accounts. We examined approved vouchers and paid checks for a number of representative expenditures.

Park Facilities assets are carried in the accounts at net depreciated book amounts as at December 31, 1940 plus subsequent additions, at cost, less retirements. Provision for depreciation from January 1, 1941 to December 31, 1947 has been computed on the resulting book balances.

In our opinion, subject to the comments contained in the previous paragraph, the accompanying balance sheet and statements of transactions of the various funds of the Society and of the Pension Fund present fairly the financial position of the Society at December 31, 1947 on the basis stated therein, and the changes in the funds of the Society and in the Pension Fund for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

BARROW, WADE, GUTHRIE & Co.,
Certified Public Accountants

New York, N. Y.
February 7, 1948.

SUMMARY OF EXPENDITURES, 1896 to 1947, New York Zoological Society and the City of New York, on Account of the Development and Maintenance of the Zoological Park and the Aquarium, Including the Purchase of Collections and Also for the Scientific and General Purposes of This Society.

Year	EXPENDED BY THE CITY OF NEW YORK			FROM GATE RECEIPTS		EXPENDED BY THE NEW YORK ZOOLOGICAL SOCIETY									
	Zoological Park Maintenance	Aquarium Maintenance	Bond Issues a/c Park & Aquarium	Construction and Repairs	Purchase of Animals	Zoological Park Development	Aquarium Improvements	Zoological Park Maintenance	Aquarium Maintenance	Purchase of Animals	Aquarium Specimens	Heads and Horns Collection	Pension Fund Contribution	Library and Paintings	Scientific and General Purposes
1896	.....	.....	.....	.....	.....	\$ 4,213.63	.....	.....	.....	.....	.....	.....	.....	.....	.....
1897	.....	.....	.....	.....	.....	6,424.61	.....	.....	.....	.....	.....	.....	.....	.....	\$ 2,903.74
1898	.....	.....	.....	.....	.....	23,597.80	.....	\$ 1,292.16	.....	.....	.....	.....	.....	.....	4,339.20
1899	\$ 30,000.00	.....	.....	.....	.....	145,495.80	.....	7,038.61	.....	\$ 8,540.72	.....	.....	.....	\$ 102.76	3,476.02
1900	40,000.00	.....	\$125,000.00	.....	\$ 2,470.88	34,626.24	.....	6,189.33	.....	3,784.32	.....	.....	.....	88.13	5,601.78
1901	65,000.00	.....	300,000.00	.....	2,998.80	18,348.61	.....	3,714.37	.....	11,652.24	.....	.....	.....	462.20	7,597.16
1902	85,000.00	\$ 5,959.97	250,000.00	.....	4,256.50	5,908.69	.....	2,757.57	.....	20,983.07	.....	.....	.....	224.73	11,068.69
1903	104,965.00	46,453.68	280,000.00	.....	5,912.95	1,038.20	.....	.....	.....	20,361.62	.....	.....	.....	456.03	13,608.10
1904	104,965.00	46,439.72	315,000.00	.....	5,421.90	1,013.87	.....	1,894.37	.....	14,299.61	.....	.....	.....	887.16	15,072.84
1905	134,965.00	44,968.50	275,000.00	.....	6,849.00	144.00	.....	.....	.....	20,643.40	.....	.....	.....	418.10	18,773.90
1906	144,965.00	44,987.71	250,000.00	.....	8,132.35	778.48	.....	.....	.....	14,907.36	.....	.....	.....	319.16	17,961.67
1907	141,558.75	44,183.87	100,000.00	.....	8,248.65	370.72	.....	.....	.....	10,606.03	.....	\$ 892.71	.....	644.05	15,999.68
1908	154,627.00	44,157.27	65,000.00	.....	9,446.40	232.27	.....	.....	.....	4,231.61	.....	735.77	.....	1,313.87	14,693.92
1909	162,325.00	45,971.44	10,000.00	.....	9,992.75	2,860.92	.....	.....	.....	9,734.43	.....	7,340.82	.....	609.56	17,168.95
1910	167,632.00	45,974.86	89,500.00	.....	9,909.90	5,918.35	.....	.....	.....	4,339.25	\$ 973.90	2,036.39	.....	1,021.87	20,627.77
1911	174,632.00	47,560.21	155,000.00	.....	11,611.15	1,155.00	.....	.....	.....	6,659.89	1,191.80	1,615.38	.....	1,221.26	23,409.39
1912	182,365.00	46,597.08	.....	.....	11,838.40	40.00	.....	.....	.....	22,750.18	1,350.03	556.94	.....	1,031.55	32,109.01
1913	191,925.00	47,335.62	29,100.00	.....	12,404.25	218.45	.....	.....	.....	10,665.57	1,850.25	486.00	.....	732.97	32,543.88
1914	200,000.00	46,995.53	.....	\$ 9,237.81	3,831.15	2,175.13	.....	.....	.....	22,590.44	1,792.99	338.73	\$3,333.33	3,541.15	28,246.42
1915	200,000.00	46,991.66	21,425.00	9,175.86	.....	887.88	.....	.....	.....	13,629.41	1,466.64	1,024.91	8,000.00	4,181.24	31,398.08
1916	197,074.35	46,996.43	.....	9,599.81	.....	425.30	.....	.....	.....	13,511.12	2,193.57	1,031.47	8,000.00	1,555.12	38,339.99
1917	199,560.00	46,903.61	.....	3,488.31	7,118.90	1,450.05	.....	11,537.79	.....	10,175.70	1,637.15	18.12	8,000.00	2,869.20	44,262.48
1918	207,586.00	48,630.71	.....	2,642.70	.....	48.12	.....	1,580.00	\$ 93.61	8,425.92	960.19	18.61	8,000.00	3,559.85	34,125.49
1919	190,000.00	45,000.00	5,000.00	4,917.84	.....	.....	\$ 3,450.00	19,924.00	407.07	13,345.59	1,028.05	88.27	8,000.00	1,442.07	45,599.71
1920	250,098.27	53,971.48	15,000.00	17,438.28	.....	5,007.00	4,095.03	5,141.92	.....	32,761.08	1,654.02	263.86	8,000.00	2,517.64	51,018.20
1921	276,951.01	65,203.12	86,000.00	25,463.77	.....	88,734.92	53,635.02	6,068.17	976.47	27,442.59	2,165.05	2,661.67	8,000.00	4,698.24	55,684.15
1922	264,618.05	63,341.26	25,000.00	17,060.00	.....	50,888.65	16,153.03	10,074.88	3,326.28	43,047.41	3,057.91	7,191.93	8,000.00	1,765.78	58,797.69
1923	262,724.50	57,166.63	.....	18,388.20	.....	5,000.00	.....	19,019.09	3,319.44	24,456.20	1,432.89	1,550.69	8,000.00	3,391.96	58,404.21
1924	262,471.01	57,319.20	7,970.00	16,806.00	.....	.....	28,233.45	28,956.34	8,097.14	11,560.62	2,013.88	942.34	8,000.00	1,938.77	76,559.41
1925	262,808.69	58,324.89	85,000.00	19,974.05	.....	.....	.....	38,793.01	4,380.45	20,843.01	2,609.55	667.78	8,000.00	1,174.24	242,753.89
1926	273,815.12	62,266.20	1,500.00	20,102.90	.....	.....	.....	45,467.10	7,261.21	23,460.04	2,847.35	306.32	8,000.00	562.40	87,915.27
1927	276,855.19	65,216.89	.....	18,960.48	.....	.....	1,395.00	61,968.22	11,656.97	27,545.92	2,861.55	135.00	8,000.00	2,477.37	82,807.54
1928	319,380.50	88,109.12	.....	18,106.25	.....	2,480.06	.....	52,676.35	10,776.84	21,001.88	2,912.97	107.89	8,000.00	1,168.15	88,794.37
1929	338,359.00	71,229.35	100,000.00	21,957.80	.....	13,095.54	984.85	59,673.38	13,670.81	23,783.69	3,572.14	669.48	8,000.00	4,029.63	122,774.78
1930	350,170.92	81,343.46	50,000.00	20,834.91	.....	2,500.89	375.00	65,600.39	16,966.30	17,492.92	1,355.56	639.04	10,000.00	2,726.37	134,278.88
1931	349,344.95	76,408.08	.....	14,890.58	.....	5,131.68	.....	65,601.03	19,541.40	24,439.56	3,650.58	1,707.40	10,000.00	6,713.26	128,871.12
1932	337,490.01	76,071.24	.....	16,710.25	.....	1,852.40	.....	61,127.48	19,155.01	20,039.28	1,934.84	335.00	10,000.00	3,607.97	97,303.32
1933	268,633.38	67,814.24	5,422.63	13,961.02	.....	.....	.....	62,996.66	18,120.73	7,644.14	2,199.91	118.65	10,000.00	3,384.38	86,757.06
1934	257,423.08	65,806.61	.....	11,025.88	.....	1,037.19	.....	66,502.59	18,229.23	9,267.86	1,641.06	162.86	10,000.00	606.53	81,711.26
1935	265,630.94	68,203.46	.....	11,596.51	.....	.....	.....	60,237.94	18,832.57	16,530.28	2,031.56	275.21	10,000.00	383.07	82,929.14
1936	265,057.37	68,760.95	.....	13,496.42	.....	100.00	.....	57,270.94	17,886.45	20,918.46	2,867.50	178.43	10,000.00	470.18	79,835.73
1937	267,192.29	73,807.74	.....	11,527.85	.....	.....	.....	56,262.45	16,408.55	22,417.08	2,799.17	24.79	19,047.09	1,415.39	92,609.40
1938	282,759.71	79,225.20	.....	10,235.70	.....	.....	.....	57,043.10	13,408.11	15,351.51	558.82	.....	20,455.95	431.41	93,543.59
1939	283,280.81	79,164.23	.....	11,019.23	.....	.....	.....	51,050.57	12,941.70	23,012.27	403.75	175.00	20,475.95	345.30	92,576.90
1940	282,761.15	78,905.12	.....	8,392.10	.....	102,343.87	.....	57,513.25	12,022.76	39,627.52	577.10	.....	20,069.17	533.85	98,501.09
1941	286,284.59	62,052.95	.....	15,947.33	.....	187,408.02	.....	84,254.19	9,466.70	57,236.77	574.40	.....	18,206.34	1,316.89	100,846.55
1942	258,656.76	50,931.00	.....	10,169.20	.....	43,088.43	.....	49,226.40	4,807.79	8,369.36	553.52	.....	10,762.57	401.65	144,765.21
1943	305,203.23	33,324.31	.....	11,904.80	.....	38,860.03	3,500.00	51,833.51	5,154.21	2,319.36	336.19	.....	9,832.98	574.01	73,192.91
1944	315,787.82	33,790.82	.....	17,316.09	.....	32,101.60	23,420.00	50,691.82	3,717.28	5,106.59	96.48	.....	10,234.06	405.52	88,594.55
1945	334,288.37	38,158.81	.....	20,745.35	.....	58,943.48	225.52	58,846.39	5,928.38	11,466.19	460.34	.....	12,681.89	1,001.92	112,541.29
1946	366,113.74	42,654.03	.....	24,688.34	.....	122,388.48	*34,997.55	62,439.25	6,742.70	43,037.09	172.30	.....	18,299.97	741.14	164,819.58
1947	440,147.60	40,285.04	.....	22,665.64	.....	101,392.80	*19,669.26	85,294.53	8,715.67	71,342.79	687.91	.....	15,751.26	690.03	348,442.82
Add Premium on Bonds, less Balances Reverting to the City			35,559.89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Expended in Connection with Preparation and Publication of "A Monograph of the Pheasants" — Gift of Col. Anthony R. Kuser															194,100.00
Expended in Connection with Galapagos Expedition — Gift of Harrison Williams															98,670.00
Transfer by the Society of Endowment for Pension Fund—July 1, 1941													239,523.45		
Totals	\$11,383,453.16	\$ 2,550,963.30	\$2,681,477.52	\$500,447.26	\$120,443.93	\$1,119,727.16	\$190,133.71	\$1,487,559.15	\$292,011.83	937,358.95	\$62,472.87	\$34,297.46	\$608,674.01	\$76,155.08	\$3,799,327.78
\$16,615,893.98				\$620,891.19		\$8,607,718.00									

The Society has paid \$40,000.00 to the City, half of which is to be applied to architects' fees for plans for development of the Zoological Park, the other half for architects' fees for plans for the proposed new Aquarium. The City has appropriated an aggregate of \$80,000.00 for these purposes.
* Includes expenditures in respect of proposed new aquarium.

REPORT OF THE AUDITING COMMITTEE OF THE NEW YORK ZOOLOGICAL SOCIETY

TO THE PRESIDENT AND BOARD OF TRUSTEES
of the New York Zoological Society

Dear Sirs:

We have examined the reports of Barrow, Wade, Guthrie & Co. on their examination of the accounts of the New York Zoological Society, the Permanent Wild Life Protection Fund and the Pension Fund of the Society for the year ended December 31, 1947, and herewith submit the same to you as a complete and satisfactory audit of said accounts, including the General and Other Invested Fund Reserves, Special and Custodian Fund Reserves, General Income Account, Pension Fund Account and the Facilities Account. It appears that all expenditures and receipts of the various accounts are fully set forth in these reports, that the cash on hand and in the various depositories has been confirmed and found correct, and that all securities in which the funds of the Society are invested have been satisfactorily accounted for.

Respectfully submitted,

GEORGE C. CLARK, *Chairman*
WILLIAM DEFOREST MANICE
J. WATSON WEBB

March 18, 1948

NEW YORK ZOOLOGICAL SOCIETY

INCORPORATION of the New York Zoological Society by the State of New York was accomplished under Chapter 435 of the Laws of 1895 and the basic purposes of the Society were embodied in Section 2:

Said corporation shall have power to establish, maintain and control zoological parks, gardens, or other collections for the promotion of zoology and kindred subjects, and for the instruction and recreation of the people. Said corporation may collect, hold, and expend funds for zoological research and publication, for the protection of wild animal life, and for kindred purposes, and may promote, form, and co-operate with other associations with similar purposes, and may purchase, sell, or exchange animals, plants, and specimens appropriate to the objects for which it was created.

Subsequently, at a special meeting of the Commissioners of the Sinking Fund, City of New York, held on March 24, 1897, a resolution was passed allotting South Bronx Park for the use of the New York Zoological Society and establishing the terms of a management agreement under which the Society has operated since that date, with only minor modifications.

The resolution of March 24, 1897, and the supplemental agreement of January 24, 1942, provided that the Society should furnish the original equipment of buildings and animals, that it should raise \$250,000 by subscription within three years of the date of starting work on the improvement of the grounds, that the Society should have the right to establish an endowment fund to be used solely for the general uses and purposes of the Society unless otherwise specified by the donors, that the City of New York should provide funds for the maintenance and care of the Zoological Park and for the maintenance of the animal collections, that the Zoological Park should be open to the public free at least four days a week, that the Society may expend the net proceeds of facilities only for the purchase of animals and the improvement of the Zoological Park and that the Society should have the right to make and control all appointments of employees and to fix salaries and make promotions.

NEW YORK ZOOLOGICAL SOCIETY

Organized 1895

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II. LEVI P. MORTON.....	1897 to 1909
III. HENRY FAIRFIELD OSBORN.....	1909 to 1925
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VI. FAIRFIELD OSBORN	1940

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VIII. LAURANCE S. ROCKEFELLER.....	1939

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II. CHARLES H. TOWNSEND, <i>New York Aquarium</i>	1902 to 1937
III. W. REID BLAIR, <i>Zoological Park</i>	1926 to 1940
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 ADELSON, RICHARD H.
 ADKINS, LEONARD D.
 ADLER, SIEGMUND

* Deceased

AGNEW, MRS. CORNELIUS R.
 AHLSTROM, MRS. OTTO J.
 ALBRIGHT, HORACE M.
 ALDRICH, MRS. DONALD B.
 ALDRICH, DR. H. B.
 ALDRICH, MISS LUCY T.
 ALDRICH, WINTHROP W.
 ALDRIDGE, MRS. WALTER H.
 ALEXANDER, SIR DOUGLAS
 ALEXANDRE, MISS ANNA R.
 ALLEE, MRS. JOHN P.
 ALLEN, MISS BETSY
 ALLEN, MR. CHARLES, JR.
 ALLEN, MRS. FREDERICK L.
 ALLEN, PHILIP K., JR.
 ALLEN, PHILIP R.
 ALLEN, MRS. PHILIP R.
 ALLING, DR. HAROLD L.
 ALLING, MRS. HAROLD L.
 ALLYN, STANLEY C.
 ALPER, JOSEPH M.
 ALSLEBEN, ALFRED A.
 ALTSHULER, MORTIMER J.
 AMEND, CARL G.
 AMORY, MRS. GEORGE S.
 AMOS, CHARLES L.
 AMOS, HAROLD C.
 AMOS, L. C.
 AMOS, WILLIAM H.
 ANDERSON, DR. ARTHUR FORREST
 ANDERSON, MISS BARBARA
 ANDERSON, GEORGE A.
 ANDERSON, LOUIS C.
 ANDERSON, ROBERT C.
 ANDERSON, MRS. WALTER J.
 ANDERSON, MRS. WILLIAM
 ANDREWS, DE LANO
 ANDREWS, DR. GEORGE CLINTON
 ANDRIESSE, ALBERT
 ANSBACHER, DAVID A.
 ANSTICE, MORTIMER R.
 ARKELL, WILLIAM C.
 ARKUSH, REUBEN
 ARMENTANO, JOSEPH
 ARMOUR, ALLISON
 ARMOUR, WILLIAM
 ARMSTRONG, DR. EDWARD MCP.
 ARMSTRONG, GEORGE S.
 ARMSTRONG, JAMES F.
 ARNOLD, MISS ANNE LOUISA
 ARNOLD, MRS. WILLIAM B.

* Deceased

ARON, JACK R.
 ARONSON, BERNARD
 ASCH, DAVID
 ASCOLI, MRS. MAX
 ASH, WILLIAM J.
 ASSMUTH, REV. JOSEPH
 ASTLETT, HARRY A.
 ATKINSON, MRS. JOHN R.
 ATRAN, FRANK Z.
 ATWOOD, KIMBALL C., JR.
 ATZ, MRS. L. A.
 AUBRY, MRS. JULES W.
 AUCHINCLOSS, C. C.
 AUCHINCLOSS, MRS. EDGAR S.
 *AUCHINCLOSS, DR. HUGH
 AUCHINCLOSS, DR. HUGH, JR.
 AUCHINCLOSS, MRS. REGINALD L. G.
 AUERBACH, MASTER PHILIP HONE
 AUSTIN, JAMES M.
 AUSTIN, MRS. MADELAINE H.
 AVERETT, MRS. ELLIOTT
 AVERY, MISS MYRTILLA
 AVINOFF, ANDREY
 AXELRAD, DR. JOSEPH
 *AYCRIGG, MRS. BENJAMIN A.
 AYER, CHARLES F.
 AYERS, MRS. ALFRED B.
 AYERS, MISS ISABELLE
 AYLWARD, DAVID A.
 BABBOTT, DR. FRANK L.
 BABCOCK, MISS JOAN
 BACHE, HAROLD L.
 BACHMANN, NORBERT H.
 BACKER, GEORGE
 BACKES, MISS KATHARINE
 BACON, CHARLES E.
 BACON, MRS. FRANCIS MCNEIL
 BACON, MRS. FRANCIS MCNEIL, 3RD
 BACON, ROGERS H.
 BAER, WILLIAM B.
 BAGGER, MISS MABEL E.
 BAHNSEN, MRS. HENRY
 BAILEY, PERCY LAURANCE, JR.
 BAILEY, DR. SAMUEL P.
 BAILEY, THEODORE L.
 BAKER, GRENVILLE K.
 BAKER, HUGH B.
 BAKHMETEFF, BORIS A.
 BALABAN, A. J.
 BALDWIN, MRS. ROBERT HOWE
 BALDWIN, WALTER J.
 BALDWIN, MRS. WILLIAM H.

BALL, HERMAN F.
 BALL, ROBERT E.
 BALLANTINE, ARTHUR A.
 BALLARD, MISS AMY HOPE
 BALLARD, MRS. EDWARD L.
 BALLIN, MRS. G. LEE
 BAMJEE, J. DINSHAW
 BANCROFT, MISS CONSTANCE J.
 BANDLER, DAVID B.
 BANDLER, WILLIAM A.
 BANGS, FRANCIS N.
 BANKS, ALEXANDER S.
 BANKS, MRS. WILLIAM FOSTER
 BARACH, DR. ALVAN L.
 BARBAROTTO, MRS. KATHRYN
 BARBER, JOHN T.
 BARBER, THOMAS H.
 BARBOUR, MRS. CHARLOTTE A.
 BARBOUR, FLOYD E.
 BARKER, DR. CLINTON
 BARNARD, J. AUGUSTUS
 BARNES, COURTLANDT D.
 BARNES, HOWEL H., JR.
 BARNES, JOHN W.
 BARNES, VICTOR
 BARNETT, VINCENT G.
 BARNEY, PHILIP C.
 BARRETT, MRS. G. HINMAN
 BARRETT, WILLIAM FELTON
 BARRIE, GEORGE N.
 *BARRON, GEORGE D.
 BARROW, ARCHIBALD
 BARROWS, MISS FRANCES H.
 BARTLENA, GILBERTE ANDREE
 BARTLETT, EDWIN D.
 BARTOL, HENRY G.
 BARTRAM, MISS EVELYN
 BASS, DR. MURRAY H.
 BASS, PERKINS
 BASSETT, MRS. CARROLL P.
 BASTEDO, PHILIP
 BATES, CHARLES E.
 BATTERMAN, HENRY L.
 BATTEY, WILLIAM EARLE
 BAUER, ALFRED
 BAUER, BERNARD
 BAUER, LEO
 BAUM, DR. WALTER
 BAUMAN, MISS A. I.
 BAUMAN, EDGAR
 BAUMAN, MRS. EDGAR
 BAUMANN, WALTER S.

* Deceased

BAXTER, MRS. HUGH H.
 BAYNE, MRS. LAWRENCE P.
 BEACH, EDWIN E.
 BEACH, MISS JUDY
 BEACH, WILLIAM N.
 BEADEL, HENRY L.
 BEADLESTON, MISS EDITH
 BEAL, GEORGE J.
 BEAL, MRS. GERALD F.
 BEALS, JOHN D., JR.
 BEAR, JOSEPH AINSLIE
 BEARD, LOUIS ARNOLD
 BEARD, STANLEY D.
 BEARDSLEY, RANDOLPH H.
 BECKER, MISS MARIE F.
 BECKER, RUDOLPH
 BECKER, SIDNEY B.
 BECKET, G. CAMPBELL
 BEEKMAN, MRS. CHARLES KELLER
 BEEKMAN, DR. FENWICK
 BEGG, MRS. WILLIAM R.
 BEGRISCH, FRANK W.
 BEHRINGER, MISS JANE
 BELDOCK, GEORGE J.
 BELL, WILLIAM B.
 BELLAMY, F. WILDER
 BELLAMY, MRS. F. WILDER
 BELLER, A.
 BELLER, WILLIAM C.
 BELMONT, MRS. AUGUST, JR.
 BELTH, HERMAN
 BENDER, MRS. MARJORIE M.
 BENDIXSEN, A.
 BENEDICT, ELLIOT S.
 BENEDICT, MRS. EVELYN
 BENET, MISS MARJORIE FLACK
 BENFIELD, EDWARD S.
 BENJAMIN, MRS. WILLIAM M.
 BENKARD, FRANKLIN
 BENNETT, ALFRED B.
 BENNETT, MISS DOROTHY A.
 BENNETT, IRL E.
 BENNETT, LAWRENCE
 BENNETT, ROBERT W.
 BENT, MISS MILDRED
 BENT, QUINCY
 BENZIGER, BRUNO
 BERGEN, DR. CATHARINE
 BERK, DAVID
 BERKITZ, BERNHARD
 BERLINGER, JOSEPH F.
 BERMAN, MRS. DAVID

BERNET, MISS LENA
 BERNHARD, FREDERICK A.
 BERNHARD, RICHARD J.
 BERNHEIM, GEORGE B.
 BERNHEIM, MRS. HENRY J.
 BERNHEIMER, SIDNEY G.
 BERNIS, CHARLES A.
 BERNSTEIN, THEODORE
 BERNUTH, CHARLES M.
 BERTHEAU, CESAR J.
 BEST, MRS. CHARLES B.
 BETTON, MISS ELINOR WELD
 BETTRIDGE, WILLIAM E.
 BETTS, MASTER CHARLES
 BETTS, MASTER WYLLYS
 BIDDLE, CLEMENT M.
 BIEBER, SIEGFRIED
 BIERMAN, D. H.
 BIERMAN, DR. WILLIAM
 BILKEY, H. EDWARD
 BINCKEROOD, JOHN W.
 BINDER, EDWIN A.
 BINGHAM, ARTHUR W., JR.
 BINGHAM, MRS. HARRY PAYNE, JR.
 BIRCH, MRS. JOHN F.
 BIRCHALL, MISS KATHARINE H.
 BIRCHELL, MRS. FREDERICK T.
 BIRD, S. HINMAN
 BIRD, MRS. S. HINMAN
 BISCHOFF, MISS E. MAY
 BISHOP, DR. LOUIS FAUGERES
 BISHOP, MRS. MORRIS
 BISPHAM, GEORGE TUCKER
 BLACKSTONE, MRS. F. GORDON
 BLAGDEN, MRS. F. MEREDITH
 BLAIN, DR. ALEXANDER W.
 BLAIR, CHARLES H.
 BLAIR, MISS ROSANNE
 BLAIR, WOLCOTT
 BLAKE, FREDERICK H.
 BLANCO, JUAN CARLOS, JR.
 BLAUNER, ROBERT
 BLICK, JOHN C.
 BLICKMAN, SAUL
 BLISS, ANTHONY A.
 BLISS, MRS. CORNELIUS N.
 BLISS, MISS SUSAN D.
 BLISS, MRS. WALTER P.
 BLODGET, ALDEN S.
 BLODGETT, THOMAS H.
 *BLOGG, PERCY T.
 BLOOM, MRS. M. G.
 ° Deceased

BLOOMINGDALE, SAMUEL J.
 BLOSSOM, MRS. DUDLEY S.
 BLUM, MRS. HENRY L.
 BLUM, MRS. RICHARD
 BLUMENTHAL, SIDNEY
 BOARDMAN, MRS. BRADFORD
 BOARDMAN, KENNETH
 BOARDMAN, MRS. KENNETH
 BOARDMAN, MISS ROSINA
 BOCHER, MAIN R.
 BODE, WILLIAM A.
 BODE, WILLIAM L.
 BOEGEHOLD, MRS. E. S.
 BOEHLKE, JAMES
 BOESE, QUINCY WARD
 BOETTGER, THEODORE
 BOGERT, MARSTON T.
 BOHMERT, MARGARET T., PH.D.
 BOISSEVAIN, ADOLPHE
 BOLES, EDGAR H.
 BOLEY, JOHN
 BOLIE, MISS PEARL B.
 BOLTON, MISS ELLA F.
 BOND, MRS. STEPHEN N.
 BONFIG, H. C.
 BONHAM, FREDERICK T.
 BONTECOU, JESSE M.
 BOOTH, ALBERT E.
 BOOTH, LIONEL R.
 BOOTH, MRS. ROBERT CYRUS
 BOOTH, WILLIS H.
 BORDEN, ALBERT GREENE
 BORDEN, RICHARD
 BORG, MRS. SIDNEY C.
 BORSTED, MISS J. DOROTHY
 BORI, MISS LUCREZIA
 BORISH, MRS. M. E.
 BOSTWICK, GEORGE H.
 BOSWELL, STANLEY B.
 BOURNE, MISS GRACE E.
 BOWDOIN, GEORGE TEMPLE
 BOYER, MRS. PHILIP, JR.
 BOYER, ROBERT C.
 BOYLES, JAMES M.
 BRAATEN, ARTHUR P.
 BRACE, DONALD C.
 BRADLEY, MISS NORA
 BRADY, MRS. BERTHA C.
 BRAGA, GEORGE A.
 BRAINARD, VIETOR
 BRAMS, DR. WILLIAM M.
 BRAND, MRS. ALBERT R.

BRAND, JOSEPH
 BRANDON, PETER
 BRASSARD, DR. J. A.
 BRATTER, EDWARD M.
 BRECHER, LEO
 BREED, DR. EBEN
 BREITENBACH, JULIUS M.
 BRENNER, MISS GERTRUDIS
 BREWER, MRS. GEORGE E., JR.
 BREWSTER, MISS DIANA
 BRICE, MRS. HELEN E.
 BRICK, GEORGE H.
 BRIGGS, MRS. BERTA N.
 BRIGGS, FREDERIC R.
 BRILL, DR. A. A.
 BRITTON, MISS MARGUERITE
 BRIXEY, MRS. RICHARD DE WOLFE
 BRODMAN, C. F.
 BROHL, EARL M.
 BROMFIELD, LOUIS
 BROOME, ROBERT E.
 BROPHY, CHARLES B.
 BROSS, MRS. JOHN A.
 BROSSIEAU, JACK
 BROWN, MRS. ARCHIBALD M., JR.
 BROWN, CAXTON
 BROWN, CHARLES S.
 BROWN, CLYDE, JR.
 BROWN, MISS CORNELIA CLIFFORD
 BROWN, MISS EDITH HARMAN
 BROWN, MRS. FRANKLIN Q.
 BROWN, GROVER C.
 BROWN, H. CLIFFORD
 BROWN, MAJOR JAMES
 BROWN, JAMES M.
 BROWN, JAMES OLIVER
 BROWN, ROBERT A.
 BROWN, ROBERT E.
 BROWN, SAMUEL
 BROWN, THEODORE
 BROWN, LT. COMDR. VERNON H.
 BROWN, WALTER A.
 *BROWN, WARREN D.
 BROWNE, GILBERT G.
 BRUCE, MISS AUDREY
 BRUCE, MRS. MELLON
 BRUNDIGE, MISS ELIZABETH B.
 BRUNDIN, Y. PIERRE
 BRYANT, MISS PENNY
 BRYCE, MISS MARY T.
 BUBB, GEORGE L.
 BUCHHEISTER, CARL W.

* Deceased

BUCHMAN, DR. M. R.
 BUCK, ELLSWORTH B.
 BUCKBEE, GEORGE E., JR.
 BUCKINGHAM, G. A.
 BUCKLEY, JERE D.
 BUDD, MRS. HUDSON
 BUGBEE, MRS. HENRY G.
 BULKLEY, DAVID TOD
 BULKLEY, MRS. DAVID TOD
 BULKLEY, EDWIN M.
 BULKLEY, J. OGDEN
 BULL, MRS. DAVID C.
 BULL, MRS. LUDLOW
 BULLOCK, MRS. HUGH
 BURBANK, DR. REGINALD
 BURCH, MRS. LOWELL R.
 BURDEN, MRS. I. TOWNSEND, JR.
 BURDEN, JAMES A.
 BURDEN, MRS. WILLIAM A. M.
 BURDETT, DR. FLETCHER H.
 BURGER, JOSEPH P.
 BURGESS, THORNTON W.
 BURKE, DR. E.
 BURKE, MRS. J. RANDOLPH
 BURKHARDT, MASTER EDWARD A.
 BURKMAN, CHARLES H.
 BURLINGAME, MRS. FREDERICK A.
 BURLINGHAM, CHARLES
 BURLINGHAM, MRS. CHARLES
 BURLINGHAM, CHARLES C.
 BURNETT, MRS. R. PEYTON
 BURNSIDE, IRVING H.
 BURPEE, GEORGE W.
 BURT, CLAYTON R.
 BURTEN, IRVING
 BURTON, HOWES
 BURTON, JOHN H.
 BUSH, MRS. D. FAIRFAX
 BUSH, JAMES I.
 BUSHNELL, MRS. ERICSSON F.
 BUSK, JOSEPH R.
 BUTLER, ARTHUR W.
 BUTT, JOHN D.
 BUTTERFIELD, MISS ALICE D.
 BUTTERLY, JAMES N.
 BUTTON, MISS JUDITH
 BYE, MISS ANNIE E. F.
 CABOT, MRS. FRANCIS H.
 CABOT, JOHN B.
 CACCHIONE, MRS. ANNE G.
 CADY, MRS. HARRISON
 CAFFYN, HAROLD R.

CALDWELL, MRS. JULIUS A., III
 CALENDO, MISS ANTOINETTE B.
 CALLAN, WILLIAM
 CALLENDER, JOHN A.
 CAMERON, KIRK L.
 CAMHI, MEYER
 CAMMANN, MRS. H. SCHUYLER
 CAMP, FREDERIC E.
 CAMPBELL, CHARLES
 CAMPBELL, DONALD
 CAMPBELL, DR. ELEANOR A.
 CAMPBELL, MISS FLORENCE A.
 CANE, MELVILLE H.
 CANNON, DR. A. BENSON
 CANNON, ALBERT JOHN
 CANNON, MRS. JOSEPH M.
 CAREY, MRS. ANDREW GALBRAITH
 CARLE, MRS. ROBERT W.
 CARLISLE, DONALD T.
 CARLTON, NEWCOMB
 CARPENTER, SIDNEY C.
 CARPENTER, WILLIAM M.
 CARRIKER, DR. MELBOURNE
 CARROLL, PHILIP A.
 CARSE, MRS. HENRY R.
 CARSON, MRS. J. HENRY
 CARTER, ERNEST T.
 CARTER, HARVEY D.
 CASAMAJOR, DR. LOUIS
 CASAMAJOR, MISS MARTHA
 CASS, CHARLES ANDERSON
 CASTLEBERRY, MRS. C. ALBERT
 CATES, LOUIS S.
 CATTELL, JACQUES
 CATTELL, DR. McKEEN
 CAULKINS, DAN P.
 CECIL, JAMES MCCOSH
 CECIL, DR. RUSSELL L.
 CHADBOURNE, WILLIAM M.
 CHALMERS, ARTHUR A.
 CHAMBERLAIN, GEORGE A.
 CHAMBERLAIN, JAMES R.
 CHAMBERS, FRED D.
 CHANDLER, MRS. PERCY M.
 CHANLER, S. ASHLEY
 CHANLER, WILLIAM ASTOR
 CHAPIN, MISS CORNELIA VAN A.
 CHAPMAN, DR. T. L.
 CHARLES, MRS. M. DEPEYSTER
 CHASE, MRS. G. T.
 CHASE, JOHN P.
 CHASE, JOHN P., JR.
 CHAUNCEY, A. WALLACE

CHAUNCEY, MISS EMILY H.
 CHELIMER, DR. MILES
 CHELIMER, MRS. MILES
 CHENERY, MRS. WILLIAM L.
 CHENEY, MRS. KNIGHT DEXTER
 CHENEY, PAUL H.
 CHIANG YEE
 CHILD, MISS RUTH AUCHINCLOSS
 CHILDS, EDWARD C.
 CHILDS, EVERSLEY
 CHILDS, S. WINSTON, JR.
 CHISHOLM, KENNETH
 CHOATE, ARTHUR O.
 CHOATE, MRS. ARTHUR O.
 CHOATE, ARTHUR O., JR.
 CHOATE, MISS CAROLINE
 CHOATE, MISS MABEL
 CHRISTENSEN, S. A.
 CHRISTIE, MISS NANCY ANN
 CHUBB, MRS. F. Y.
 CHURCH, AUSTIN
 CHURCH, CHARLES T.
 CHURCH, E. DWIGHT
 CHURCH, E. J.
 CHURCH, MRS. WILLARD
 CIZEK, DR. LOUIS J.
 CLARK, DONALD R.
 CLARK, MRS. DONALDSON
 CLARK, MISS EUGENIE
 CLARK, MISS GLADYS VOORHEES
 CLARK, H. HUBER
 CLARK, MRS. HAROLD BENJAMIN
 CLARK, HAROLD T.
 CLARK, JAMES CAMERON
 CLARK, LEONARD B.
 CLARK, MRS. STEPHEN C.
 CLARK, WALTER T.
 CLARK, MRS. WILLIAM ANDREWS
 CLAUSEN, GEORGE U.
 CLAYBERGER, RAYMOND P.
 CLAYBURGH, MME. ALMA
 CLEAVES, ALFRED S.
 CLEAVES, DR. ARTHUR W.
 CLEF, ERNST A.
 CLELAND-SCOTT, S. R.
 CLEVELAND, COL. PAUL
 CLOETE, STUART
 CLOWES, F. J.
 CLOWES, FREDERICK V.
 CLYDE, WILLIAM P.
 COAKLEY, MRS. HENRY B.
 COBB, BOUGHTON
 COCHU, FERDINAND

COGGESHALL, MRS. CALVERT
 COHEN, EDWARD I.
 COHEN, ELIAS A.
 COHEN, FREDERICK M.
 COHEN, SAUL C.
 COHN, LESTER D.
 COLBURN, ALBERT E.
 COLBY, COL. FRANCIS T.
 COLE, DR. C. MONFORD
 COLE, MRS. GEORGE W.
 COLE, MRS. HENRY P.
 COLE, RODNEY B.
 COLE, MRS. RUFUS
 COLE, WILLIAM H.
 COLEMAN, MRS. LEIGHTON H.
 COLGATE, HENRY A.
 COLGATE, MRS. HENRY A.
 COLGATE, MRS. JOHN K.
 COLIN, RALPH F.
 COLLIER, MRS. R. J.
 COLLINS, MISS ELIZABETH E.
 COLLISON, E. AUBREY
 COLT, MRS. FRANCIS S.
 COLT, HARRIS D.
 COLT, MRS. RICHARD C.
 COMPTON, RICHARD
 COMPTON, MRS. RICHARD
 CONDE, MISS CORINNE
 CONDIT, MISS A. MAY
 CONGDON, G. MAURICE
 CONKLIN, JOHN M.
 CONNELLY, ALBERT R.
 CONNETT, F. S.
 CONNICK, ARTHUR E.
 CONNOR, CARLETON S.
 CONROY, MRS. WILLIAM H.
 COOK, MRS. ALFRED A.
 COOK, MRS. ANN
 COOK, JAY E.
 COOKE, CARLETON S.
 COOLIDGE, HENRY PARSONS
 COOLIDGE, J. LINZEE
 COOLIDGE, JOHN T.
 COOLIDGE, JOHN T., JR.
 COONEY, MRS. EDWIN W.
 COONLEY, HOWARD
 COOPER, DR. HENRY S. FENIMORE
 COOPER, FRED
 COOPER, KENNETH F.
 COOPER, W. M.
 COPE, FRANCIS R., JR.
 COPELAND, CHARLES L.
 COPPELL, MISS MARY B.

CORBIN, MRS. JOHN
 CORLIES, HOWARD
 CORMIER, FRANCIS
 CORNING, H. K.
 CORNING, MISS URSULA
 COSTIGAN, PHILIP J.
 COSTIKYAN, MRS. GRANGER
 COUDERT, FERDINAND W.
 COWDIN, J. CHEEVER
 COWDIN, MRS. J. CHEEVER
 COX, WARREN E.
 CRAGIN, DONALD WILSON
 CRAIG, MRS. ISABELLA M.
 CRANE, MRS. W. MURRAY
 CRANFORD, RALPH N.
 CRAWFORD, MRS. CHARLES A.
 CRAWFORD, FRANK RUSSELL
 CRESAP, LOGAN
 CRESSON, MRS. WILLIAM PENN
 CREWS, JOHN R.
 CRIMMINS, MISS MARY
 CRIMMINS, THOMAS
 CRISPELL, REUBEN B.
 CROCKER, GEORGE A.
 CROMBIE, MRS. ARTHUR CHOATE
 CROMPTON, DAVIS HASTINGS
 CROMWELL, JARVIS
 CROMWELL, LINCOLN
 CROSBY, PERCY L.
 CROSS, JOHN W.
 CROSS, MRS. JOHN W.
 CROSS, LT. (J.G.) THOMAS N.
 CROSS, MRS. THOMAS N.
 CROSS, MRS. WELLINGTON
 CROUSE, MASTER TIMOTHY
 CROWELL, ROBERT
 CROWNINSHIELD, MRS. FRANCIS B.
 CRUIKSHANK, WILLIAM
 CRUMB, KITTRIDGE B.
 CRYSTAL, FABIAN M.
 CUDAHY, MRS. JOSEPH M.
 CUDDIHY, ARTHUR B.
 CUDLIFF, MRS. CHANDLER
 CUFF, FRANK B.
 CULLMAN, HOWARD S.
 CULLMAN, MRS. JOSEPH F., JR.
 CUMINGS, MRS. THAYER
 CUMMING, ROBERT C.
 CUMMINS, MRS. STEPHEN
 CUNNINGHAM, ROBERT L.
 CUNNINGHAM, W. DELANCEY
 CURIEL, MRS. HELENE
 CURRIE, JOHN, JR.

CURRIE, WILLIAM E.
 CURTIS, MRS. ALLEN
 ° CURTIS, MRS. JAMES BRECKINRIDGE
 CURTISS, MISS MAUDE H.
 CUTLER, JOHN W.
 CUTLER, MRS. JOHN W.
 CUTLER, ROBERT
 CUTLER, MRS. ROBERT
 CUTLER, WILLIAM F.
 CUTTING, DR. FULTON
 CUTTING, MRS. R. FULTON, 2ND
 ° CUYLER, MRS. JULIANA S.
 CUYLER, LEWIS B.
 DACHE, MME. LILLY
 DAHLGREN, MISS OLGA DREXEL
 DAILEY, MRS. CLARKE G.
 DAKIN, MRS. HENRY D.
 DALLETT, FREDERICK A.
 DALLETT, JOHN
 DALSCAARD, ANKER N. D.
 DALY, D. LOUGHRAN
 DAMON, DR. VIRGIL G.
 DAMROSCH, MRS. FRANK
 DAMROSCH, DR. WALTER
 DANE, EDWARD
 DANE, MRS. ERNEST B.
 DANE, ERNEST B., JR.
 DANE, ROGER
 DARLING, BYRON C.
 DARLING, PVT. DONALD M.
 DARRELL, NORRIS
 DARROW, WHITNEY
 DARROW, MRS. WHITNEY
 DAVENPORT, HENRY J.
 DAVEY, MISS CAROLYN
 DAVEY, WILLIAM N.
 DAVIES, MISS AUDREY
 DAVIES, FREDERICK M.
 DAVIES, MRS. J. CLARENCE
 DAVIS, MRS. CECIL C.
 DAVIS, FRANCIS B., JR.
 DAVIS, J. LIONBERGER
 DAVIS, JOSEPH A., JR.
 DAVIS, MISS MARION
 DAVIS, MORGAN
 DAVIS, MRS. PHILIP M.
 DAVIS, DR. WILLIAM EDWIN
 DAVISON, MRS. GEORGE W.
 DAVISON, MRS. HENRY POMEROY
 DAVISSON, WILLIAM PORTER
 DAWSON, C. PRESTON
 DAY, WATSON BEACH
 ° Deceased

DEAN, MISS LEIGH
 DEBEVOISE, ELI WHITNEY
 DEBEVOISE, THOMAS M.
 DEBOER, JACOB
 DECESARE, JOHN
 DECKER, J. WILLIAM
 DECOPPET, MISS GERTRUDE
 DECROIX, MISS MARGUERITE
 DE FOREST, HENRY L.
 DE FOREST, MRS. HENRY W.
 DE FOREST, JOHNSTON
 DEGENER, JOHN F., JR.
 DEGERSDORFF, MRS. CASPAR C.
 DEKAY, MRS. SIDNEY
 DELACORTE, GEORGE T., JR.
 DELAFIELD, EDWARD C.
 DELAMAR, MISS ALICE A.
 DELANCEY, DARRAGH, JR.
 DELANO, FREDERIC A.
 DELANO, MRS. LYMAN
 DELLER, CHARLES B. H.
 DELTORO, MIGUEL ALVAREZ
 DEMBOW, GEORGE F.
 DEMENDONCA, DR. JACINTHO M., JR.
 DEMEULES, DONALD H.
 DEMONTMORIN St. HEREM, COMTESSE
 DENBY, EDWIN H.
 DENNISON, HENRY S.
 DERBY, JAMES LLOYD
 DERHAM, MRS. CHARLES, JR.
 DEROTHSCHILD, BARONESS ALAIN
 DEROTHSCHILD, MISS CECILE
 DE SALES, AYMONT DE ROUSSY
 DESMOND, HON. THOMAS C.
 DESPARD, CLEMENT L.
 DETMER, JULIAN F.
 DEVEREUX, ALVIN
 DEVOE, ALAN
 DEWEY, FREDERICK A.
 DEWING, ARTHUR S.
 DEXTER, GEORGE M.
 DEZUYLEN, BARON EGMONT
 D'HUMY, MISS ADINE
 DICK, ADOLPH M.
 DICK, WILLIAM K.
 DICKERMAN, WATSON B.
 DICKERSON, MRS. DONALD L.
 DICKEY, MRS. CHARLES D., SR.
 DICKINSON, MRS. JOHN M.
 DIDISHEIM, HENRI M.
 DIEBOLD, JOHN T.
 DILLON, C. DOUGLAS

DILLON, MRS. CLARENCE
 DILLON, JOHN R.
 DILWORTH, J. DALE
 DINGLE, ALAN L.
 DISNEY, WALT
 DIXON, JOSEPH W.
 DIXON, W. PALMER
 †DOANE, BENJAMIN H.
 *DODD, ALFRED W.
 DODGE, CLEVELAND E.
 DODGE, MRS. CLEVELAND E.
 DODGE, DONALD D.
 DODGE, WASHINGTON
 DOELGER, WILLIAM P.
 DOENCH, MISS ION
 DOMINICK, GAYER G.
 DONALD, MISS ANN EDGAR
 DONALDSON, COLEMAN DUPONT
 DONALDSON, MRS. JOHN W.
 DONDERO, MISS MARIETTA
 DOOLITTLE, MISS ETHELWYN
 DORLAND, MRS. M. M.
 DOSTER, ALEXIS
 DOUBLEDAY, G. CHESTER
 DOUBLEDAY, GEORGE
 DOUGALL, ARTHUR B.
 DOUGHERTY, J. HAMPDEN
 DOUGLAS, BARCLAY K.
 DOUGLAS, MRS. BARCLAY K.
 DOUGLAS, MRS. GEORGE WILLIAM
 DOUGLAS, LEWIS W.
 DOUGLAS, MRS. M. P.
 DOWNEY, JOHN I.
 *DRAPER, CHARLES D.
 DRAPER, MRS. CHARLES D.
 DRAPER, MISS DOROTHY
 DRAPER, MRS. THAYER P.
 DREHER, ELMER
 DREW, MRS. CHARLES V.
 DREYFOOS, ALEXANDER W.
 DRUTZKOY, MRS. MARIA THERESA
 DROWNE, MRS. H. RUSSELL, JR.
 DUANE, MRS. CAROLYN P.
 DuBOIS, MISS MARGARET
 DUDLEY, CHARLES T.
 DUDLEY, RALPH
 DUMAS, M. G.
 DuMOND, JOSEPH
 DUNCAN, FREDERICK S.
 DUNCAN, MRS. ISABELLE K.
 DUNCAN, STUART
 DUNHAM, LAWRENCE B.
 * Deceased † In Memoriam

DUNHAM, MRS. WILLIAM P.
 DUNLOP, JAMES N.
 DUNLOP, MRS. JAMES N.
 DUNNING, JOHN S.
 DUNPHY, GERALD J.
 DUPONT, HENRY F.
 DUPONT, IRENEE
 DUPONT, LAMMOT
 DURSTINE, ROY SARLES, JR.
 DURYEA, PERRY B.
 DURYEE, SAMUEL S.
 DUSHKIN, MRS. SAMUEL
 Du VAL, GUY
 DWIGHT, MRS. WINTHROP E.
 EAGAN, COL. EDWARD P.
 EAGAN, MRS. EDWARD P.
 EAGLE, MRS. J. FREDERICK
 EATON, GEORGE L.
 EBERSTADT, FERDINAND
 EBNER, WILLIAM F.
 ECKART, EDMUND
 ECKERT, H. WILLIAM
 EDELMAN, DR. IRVING
 EDER, PHANOR J.
 EDGAR, MRS. J. CLIFTON
 EDGAR, JAMES A.
 EDGAR, MRS. W. A.
 EDGAR, WILLIAM
 EDMONDS, DEAN S.
 EDMONDS, MRS. JOHN WORTH
 EGGERS, MRS. CARL
 EICHENHOLTZ, ROBERT M.
 EICHLER, AUGUST
 EIDLITZ, MRS. ERNEST FREDERICK
 EIFLER, ADAM J.
 EINHORN, DR. MAX
 EISNER, H. RAYMOND
 EISNER, PAUL V.
 EISNER, DR. SAMUEL S.
 ELDER, ROBERT D.
 ELDRIDGE, HARRY
 ELDRIDGE, MRS. LEWIS A.
 *ELDRIDGE, MRS. ROSWELL
 ELDRIDGE, WILLIAM A.
 ELIAS, MISS CATHERINE
 ELKINS, JACOB B.
 ELKINS, WILLIAM L.
 ELLIOT, MISS MARGARET H.
 ELLIOTT, JOHN
 ELLIS, MRS. JOHN C.
 ELLIS, MRS. WILBUR DIXON
 ELLSWORTH, DUNCAN S.

ELLSWORTH, JOHN S.
 ELSBERG, DR. CHARLES A.
 ELTING, DR. ARTHUR W.
 EMANUEL, VICTOR
 EMBURY, AYMAR, II
 EMBURY, MRS. JANE S.
 EMERSON, GUY
 EMERSON, MRS. GUY
 ENGELHARD, CHARLES
 ENGLISH, RICHARD L.
 ERDMAN, MICHAEL PARDEE
 ERICKSON, MRS. A. W.
 ERICKSON, MRS. JOSIAH
 ERLANGER, GEORGE
 ERLANGER, MICHAEL
 ERLANGER, MILTON S.
 ERLANGER, SIDNEY C.
 ERNST, HOWARD M.
 ERWIN, COL. HENRY P.
 ESKESEN, MRS. T. R.
 EVANS, ALAN E.
 EVANS, MRS. JOHN C.
 EVANS, MRS. MORGAN D., JR.
 EWART, LADY TALBOT
 EWING, BAYARD
 EWING, GEORGE R. M.
 EZRA, ALFRED
 FAGG, CHARLES C.
 FAIRCHILD, MRS. B. TAPPEN
 FAIRCHILD, MRS. L. W.
 FALCONER, MISS MARGARET
 FARR, H. BARTOW
 FARR, JOHN
 FAUST, W. L.
 FAY, CHARLES J.
 FAY, W. RODMAN
 FEARLY, MRS. MORTON
 FEIGENSPAN, MRS. EDWIN C.
 FEIST, SEYMOUR
 FERBER, DR. ROBERT
 FERBER, MRS. ROBERT
 FERGUSON, CHARLES H.
 FERGUSON, MRS. FLORENCE R.
 FERGUSON, DR. LEONARD W.
 FERGUSON, MRS. LEONARD W.
 FERGUSON, MILTON J.
 FERNANDEZ, FRANCISCO J. YEPES
 FERREL, R. W.
 FERWERDA, MISS CAROL
 FIELD, MASTER MARSHALL, JR.
 FIELDING, MAJOR TEMPLE H.
 FIGOWITZ, BARNEY
 ° Deceased
 FILLEY, MRS. OLIVER D.
 FINCH, CHARLES A.
 FINCKE, REGINALD
 FINLAY, L. G.
 FINNERAN, EDWARD T.
 FISCHER, JOSEPH
 FISCHLER, A. S.
 FISHER, MISS BEATRICE
 FISHER, FRANKLIN L.
 FISHER, MARION N.
 FITCH, GEORGE
 FITCH, DR. WILMER PRICE
 FITZPATRICK, JOHN R.
 FITZPATRICK, PAUL
 FLAGG, MRS. S. GRISWOLD
 FLAGLER, HARRY HARKNESS
 FLANIGAN, HORACE C.
 FLEISCHMANN, MRS. EDWIN M.
 FLEISCHMANN, UDO M.
 ° FLEMING, MATTHEW C.
 FLEMING, MRS. MATTHEW C.
 FLETCHER, HENRY
 FLETCHER, LAURENCE B.
 FLEXNER, DONALD LEE
 FLEXNER, MISS JUNE ALISON
 FLOCK, HOWARD R.
 FLOOD, C. L.
 FLORICH, THOMAS C.
 FLUEKIGER, MISS DORA WHITMAN
 FOBES, DR. JOSEPH H.
 FOEHL, A., JR.
 FOLWELL, MRS. NICKI
 FONDILLER, MRS. RICHARD
 ° FOOT, MRS. SANFORD D.
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 FORCE, C. WARREN
 FORSHAY, EDWARD
 FORSTER, HERMAN
 FORSYTH, MISS ADELE G.
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 FOSS, MRS. HUGH H.
 FOSTER, DR. HAROLD
 FOSTER, J. HEGEMAN
 FOUILHOUX, MRS. J. ANDRE
 FOWLER, MISS AGNES
 FOWLER, HAROLD
 FOWLER, MRS. JOHN T.
 FOWLER, DR. RUSSELL S.
 FOX, MRS. ALICE
 FOX, MISS ALICE BLEECKER
 FOX, E. TUNNICLIFF
 FOX, MISS ELEANOR

FOY, MRS. BYRON C.
 FOYE, ARTHUR B.
 FRANCIS, MRS. J. DWIGHT
 FRANCKE, MRS. L. J.
 FRANK, CHARLES
 FRANK, JOHN
 FRANK, LOUIS, 2ND
 FRANK, WALTER
 FRANKLIN, JOSEPH K.
 FRANKLIN, ROBERT C.
 FRASER, GEORGE C.
 FRASER, JOHN
 FREDERICK, KARL T.
 FREDRICK, MRS. LEOPOLD
 FREDERICS, JOHN
 FREEMAN, CLAYTON E.
 FREEMAN, MISS GERTRUDE A.
 FREEMAN, MISS GLADYS U.
 FREEMAN, TALBOT O.
 FRELINGHUYSEN, THOMAS T. K.
 FREMONT, MRS. JOHN C.
 FRENCH, MRS. JOHN
 FRENCH, MRS. JOHN, JR.
 FRENCH, MISS NATHALIE H.
 FREYVOGEL, C. E. C.
 FRIED, ALBERT
 FRIED, MRS. JOSEPH
 FRIED, NATHAN
 FRIEDMAN, MICHAEL U.
 FRIEDMAN, MURRAY
 FRISCHIA, SALVATORE, JR.
 FRISSEL, MISS TONI
 FROELICH, SYLVAN L.
 FROMM, S. W.
 FROST, FREDERICK G., JR.
 FROST, MRS. JANE C.
 FROST, JOHN W.
 FROTHINGHAM, WILLIAM I.
 FULLER, MRS. JEFFERSON E.
 FULLER, ROBERT G.
 FUNK, WILFRED
 FUNKE, MRS. CARL
 FUNKE, MRS. L.
 GABRIEL, ARTHUR R.
 GADEBUSCH, PAUL H.
 GAFFNEY, JAMES
 GAILLARD, WILLIAM D.
 GAISMAN, HENRY J.
 GALBAN, EUGENIO
 GALE, C. HERBERT
 GALLAND, NED K.
 GALLATIN, MRS. ALBERT
 GALLATIN, GOELET
 GALLOWHUR, WILLIAM G.
 GAMBLE, MRS. SIDNEY
 GAMBRILL, JAMES H., JR.
 GAMBRILL, RICHARD V. N.
 GAMBRILL, MRS. RICHARD V. N.
 GANS, MRS. FREDERICK C.
 GANSS, HERMANN O.
 GARDINER, MRS. PHILIP P.
 GARDNER, LT. COL. KENNETH
 GARDNER, MRS. PAUL E.
 GARRISON, GEORGE N.
 GARSIDE, CHARLES I.
 GARVAN, MRS. FRANCIS P.
 GATES, MRS. JOHN M.
 GATES, RAYMOND E., JR.
 GATES, DR. THOMAS S.
 GAUSE, EDMUND C.
 GAVER, GORDON P.
 GAVIGAN, WILLIAM M.
 GAVIN, MRS. MICHAEL
 GAWTRY, LEWIS
 GAYLEY, MRS. H. C.
 GAYLORD, ROBERT M.
 GEDDES, DONALD G.
 GEER, GEORGE JARVIS
 GEER, MRS. LANGDON
 GEIS, MRS. PHILIP
 GEISE, JACOB H.
 GEIST, JOHN
 GEIST, KENNETH
 GELLERT, MRS. LEO
 GENCLER, ARTHUR
 GENCLER, MRS. ARTHUR
 GENCLER, HERBERT B.
 GENCLER, MISS JEAN
 GERARD, MRS. JAMES WATSON
 GERNGROSS, LEO
 GERRY, MRS. LOUIS C.
 GERSON, SIDNEY
 GETTYS, R. E.
 GIBBONS, DOUGLAS
 GIBSON, CHARLES D. W.
 GIBSON, HARVEY D.
 GIBSON, MRS. HARVEY D.
 GIBSON, JAMES J.
 GIESE, GEORGE
 GILBERT, MRS. BENJAMIN D.
 GILBERT, MRS. FITCH
 GILES, MRS. AQUILA
 GILLMORE, MRS. HENRY VAN KLECK
 GIMBEL, BERNARD F.
 GITHENS, W. FRENCH
 GITHENS, MRS. W. FRENCH

GIVEN, JOHN LA PORTE
 GLAZEL, MISS MARIANNE
 GLAZIER, MRS. HENRY S.
 GLAZIER, HENRY S., JR.
 GLAZIER, WILLIAM S.
 GLEAVES, MISS SUSAN ALLYN
 GLENN, JOHN M.
 GLICKENHAUS, MORRIS
 GODDARD, ARTHUR E.
 GODDARD, MISS JESSAMINE
 GODDARD, MRS. MORRILL
 GODDARD, MORRILL, JR.
 GODWIN, MISS FRANCES
 GODWIN, FREDERICK M.
 GODWIN, MRS. HAROLD
 GOEBEL, HENRY F.
 GOELET, MRS. ROBERT WALTON
 GOELLER, DR. FRANK WARD
 GOLDBERG, MRS. PEARL
 GOLDMAN, RICHARD S.
 GOLDSCHMIDT, MRS. CAREL
 GOLDSCHMIDT, JOEL L.
 GOLDSMITH, ARTHUR J.
 GOLDSMITH, MRS. MILTON M.
 GOLDSMITH, RICHARD
 GOLDSTEIN, DAN
 GOLDSTONE, HARMON H.
 GOMAN, GEORGE W.
 GOMEZ, MISS JUNE
 GOOCH, THOMAS W.
 GOOD, DR. ROBERT
 GOODELL, RAYMOND B.
 GOODHUE, ALLAN E.
 GOODHUE, MRS. CHARLES E.
 GOODMAN, HERBERT S.
 °GOODNOW, DAVID F.
 GOODRICH, MRS. DAVID M.
 GOODWILLIE, ROBERT H.
 GOODWIN, JAMES L.
 GOODYEAR, ANSON CONGER
 GORDON, ALBERT H.
 GORDON, LOUIS W.
 GOTTESMAN, MRS. D. S.
 GOTTLIEB, DR. CHARLES
 GOULD, MRS. EDWIN
 GOULD, ORMOND V.
 GOYETTE, IVAN A.
 GRACE, FRANCIS J. S.
 GRAEBER, MISS NOEL
 GRAF, WILLIAM
 GRAFF, MISS LOIS MANTON
 °GRAHAM, MRS. FRANCES
 ° Deceased

GRAHAM, HORACE R.
 GRAHAM, DR. JOHN C.
 GRAHAM, MISS LEIGH
 GRAHAM, WILLIAM J.
 GRANT, ALLAN A.
 GRANT, MAJOR CHAPMAN
 GRANT, MRS. DEFORREST
 GRANT, MRS. WHEADON MARTIN
 GRANT, WILLIAM T.
 GRAUSTEIN, ARCHIBALD R.
 GRAVES, DUNCAN
 GRAVES, GEORGE K., JR.
 GRAVES, HENRY, JR.
 GRAY, ARTHUR
 GRAY, HENRY G.
 GRAY, LT. COMMANDER JULIUS C.
 GRAY, REGINALD
 GRAY, MRS. THOMAS H., JR.
 GREEN, GEORGE L.
 GREEN, HERBERT, JR.
 GREEN, MISS MABEL
 GREEN, SHELDON R.
 GREEN, MRS. WILLIAM A.
 GREEN, MRS. WILLIAM G.
 GREENBAUM, MISS ALICE
 GREENBAUM, DR. HERMAN
 GREENE, MISS JOAN W.
 GREENE, LOUIS A.
 GREENE, ROBERT L.
 GREENFIELD, FREDERICK WILLIAM
 GREGG, ALBERT H.
 GREGORY, FRANKLIN U.
 GRESSER, WILLIAM
 GREW, MRS. EDWARD W.
 GRIER, ROBERT S.
 GRIFFIN, WILLIAM V.
 GRIGGS, MISS MARY LIVINGSTON
 GRIGSBY, MISS SUZANNE S.
 GRINNELL, LAWRENCE I.
 GRINNELL, DR. ROBERT S.
 GRISCOM, MRS. CLEMENT A.
 GRISCOM, LUDLOW
 GRISTEDE, MISS ANITA
 GRISWOLD, WILLIAM E. S.
 GROEDEL, HARRY
 GROSSE, WALDO
 GROSVENOR, WILLIAM
 GROUT, MRS. H. MCINTYRE, JR.
 GROVER, MASTER ROBINSON A.
 GRUHN, M. MITCHELL
 GRUNER, WILLIAM C.
 GRUNTAL, BENEDICT H.

GUBAR, ALBERT
 GUDERNATSCH, DR. F.
 GUEST, RAYMOND
 GULDEN, MRS. PAUL I.
 GULICK, ARCHIBALD A.
 GUNNISON, MRS. R. M.
 GUNTHER, WILLIAM H., JR.
 GUTERMUTH, C. R.
 GUTMAN, DEWITT
 GUY, MISS EMILIE J.
 GWILLIAM, JOHN
 GWINN, HON. RALPH W.
 GWYNNE, MRS. ARTHUR
 HAAS, CHARLES H., JR.
 HAAS, GEORGE C.
 HAAS, GUSTAVE
 HADLEY, MORRIS
 HAESELER, MRS. KURT W.
 HAFFEN, S. THOMAS
 HAIGHT, MRS. SHERMAN POST
 HALDT, HARRY PEALE
 HALL, JOHN H., JR.
 HALLOWELL, N. PENROSE
 HALLS, MRS. WILLIAM, JR.
 HALPERN, MAX J.
 HALSEY, MISS JEAN L.
 HALSTED, MRS. HARBECK
 HAMANN, MRS. WILLIAM A.
 HAMBLETON, MISS JESSIE
 HAMERSHLAG, ROBERT J.
 HAMILL, ROBERT L.
 HAMILL, MRS. ROBERT L.
 HAMILL, MRS. SAMUEL
 HAMILTON, MISS LISA
 HAMLIN, CHAUNCEY J.
 HAMLIN, S. C.
 HAMMETT, DR. JOHN E.
 HAMMOND, HENRY D.
 HAMMOND, MRS. JOHN HENRY
 HAMMOND, MISS NATALIE HAYS
 HAMMOND, PAUL
 HANCE, JOHN A.
 HAND, CHARLES E. W.
 *HANNA, WILLIAM WALKER
 HANSEN, MRS. JOHN
 HARD, MRS. DECONROY L.
 HARD, MISS SUSAN
 HARDENBERG, THOMAS E.
 HARDING, MISS LAURA
 HARDY, CHARLES J.
 HARE, MRS. MONTGOMERY
 HARKNESS, MRS. GRANT
 ° Deceased

HARLOW, MISS SUSAN ALISON
 HARRIS, CHARLES C.
 HARRIS, DUNCAN G.
 HARRIS, JOHN D.
 HARRIS, ROSS J.
 HARRIS, MRS. SIDNEY
 HARRISON, DR. CALVIN L.
 HARRISON, MRS. GEORGE L.
 HARRISON, J. R.
 HARRISON, MRS. W. HENRY
 HARRISON, WALLACE K.
 HART, JOHN W.
 HART, STANLEY
 HARTSHORNE, MRS. HAROLD
 HARTUNG, EDWARD F.
 HARTZ, JOHN E.
 HARVEY, DR. E. NEWTON
 HARWICK, HARRY J.
 HASELTINE, HERBERT
 HASKELL, AMORY L.
 HATHAWAY, STEWART S.
 HAUSER, DONALD A.
 HAUSWIRTH, DR. LOUIS
 HAVEMEIER, ALFRED F. J.
 HAVEMEYER, HENRY O.
 HAVEMEYER, MRS. HORACE, JR.
 HAVENDER, JOSEPH, JR.
 HAWKINS, DEXTER C.
 HAWKINS, MRS. MAXWELL
 HAWLEY, FRANK W.
 HAWLEY, JAMES L.
 HAY, CLARENCE L.
 HAYDEN, WILLIAM B.
 HAYES, MISS IRENE
 HAYMES, MISS E. VIOLET
 HAYNES, RAYMOND B.
 HAYS, MRS. EDWIN D.
 HAYS, MRS. HIRAM J.
 HAYS, WILL H.
 HAZARD, EVAN B.
 HAZELTINE, DR. ALAN
 °HAZELHURST, ANDREW
 HEAD, EDWARD BARRY NUGENT
 HEAD, CAPT. H. NUGENT
 HEAD, MRS. H. NUGENT
 HEAD, HENRY S. NUGENT
 HECKER, MISS FRANCES S.
 HEIDE, HENRY, JR.
 HEIDSIECK, MRS. E. JOHN
 HEIMERDINGER, FREDERICK M.
 HEIN, MISS ANNE MARIE
 HEINSHEIMER, MRS. NORBERT

HEISNER, GEORGE M.
 HEKMA, JACOB
 HELLER, ALBERT E.
 HELLER, WILLIAM G.
 HELLMAN, MISS LILLIAN
 HELME, EDWARD
 HENDELSON, WILLIAM
 HENDERSON, ALEXANDER ISELIN
 HENDERSON, DR. EDWARD
 HENDERSON, WILLIAM C.
 HEPBURN, ANDREW H.
 HEPBURN, MRS. ANDREW H.
 HERNSTADT, WILLIAM L.
 HERRICK, NEWBOLD L.
 HERRICK, WILLIAM WORTHINGTON
 HERRMANN, ERICH S.
 HESS, MRS. ALFRED F.
 HESS, MORTIMER H.
 HESSE, MRS. HAROLD G.
 HESSE, MISS JANET
 HESSEL, SIDNEY A.
 HETTESHEIMER, MISS KATHERINE
 HEWINS, MISS ELIZABETH L.
 HEWITT, MRS. THOMAS D.
 HEYD, DR. CHARLES G.
 HEYDT, CHARLES E.
 HEYDT, CHARLES O.
 HEYLMAN, MRS. HENRY B.
 HEYMAN, CLARENCE H.
 HEYMAN, DAVID M.
 HEYMSFELD, RALPH T.
 HICKOX, CHARLES V.
 HIGBY, EVERETT
 HIGGINS, JOHN W.
 HILL, E. B.
 HILL, DR. HOWARD R.
 HILLAS, ROBERT M.
 HILLMAN, HARRY R.
 HILLS, MRS. JAMES M.
 HILLS, PAUL W.
 HILLYER, ROBERT
 HINCKLEY, DANIEL B.
 HINKLE, FREDERICK W.
 HINMAN, MRS. EDWARD
 HINNEN, DR. G. A.
 HINRICHS, HANS
 HIRD, MISS MARTHA
 HIRD, MISS MARY E.
 HIRSCH, ADOLPH
 HIRSHBERG, ELIOT P.
 HIRSHENHORN, SAMUEL, JR.
 HITCHCOCK, MRS. ETHAN A.
 * Deceased

HOAGLAND, MRS. JOSEPH C.
 HODGES, COL. GILBERT T.
 HOFFMAN, F. BURRALL
 HOFFMAN, JOHN E.
 HOFFMAN, MISS MARY U.
 HOFFMAN, MRS. RUTH BROOKS
 HOFFMAN, MRS. WILLIAM M. V.
 HOFFMAN, WILLIAM W.
 HOFFMAN, MRS. WILLIAM W.
 HOFFMANN, ERWIN G.
 HOGG, KENNETH S.
 HOLDEN, MILTON W.
 HOLLAND, MRS. HELEN H.
 HOLLAND, HUDSON
 HOLLAND, MRS. HUDSON
 HOLLENBACK, MISS AMELIA B.
 HOLLINS, HARRY B., JR.
 HOLLISTER, MRS. FREDERICK K.
 HOLLSTEIN, GUSTAVUS M.
 HOLMBOE, FRITHJOF
 HOLMES, DUNCAN A.
 HOLMES, EDWARD J.
 HOLMES, HOWARD A.
 HOLMES, JOHN CLARK
 * HOLT, P. H.
 HOLTON, CHARLES W.
 HOOKER, MRS. ELON HUNTINGTON
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 HOPE, CAPT. ERNEST A.
 HOPE, MRS. JOHN GREGORY
 HOPPIN, MRS. SARAH C. W.
 HOPPIN, WILLIAM W.
 HOPSON, DR. GEORGE H.
 HORN, FRASER M.
 HORN, JOHN
 HOTALING, DAVID
 HOUGHTON, EDWARD R.
 HOUSTON, MISS JESSIE
 HOVICK, MISS ROSE LOUISE
 HOVING, WALTER
 HOWARD, MRS. HOWELL H.
 HOWARD, MISS LOIS E.
 HOWARD, ROBERT
 HOWELL, ALFRED C.
 HOWELL, W. HUNTING
 HOWES, ALFRED P.
 HOYER, F.
 HOYT, ALFRED O.
 HOYT, ELTON, 2ND
 HOYT, MRS. HENRY R.
 HOYT, MRS. J. MITCHELL
 HOYT, JOHN SHERMAN

HOYT, MRS. LYDIG
 HUBBARD, MISS DEIRDRE
 HUBBARD, RICHARD L.
 HUBBARD, WILLIAM H.
 HUBBARD, WYNANT D.
 HUDSON, MRS. LEA
 HUFELAND, MISS ELEANOR
 HUFFARD, PAUL P.
 HUGETZ, EDWARD, JR.
 HUGHES, HON. CHARLES E.
 HUGHES, CHARLES E., JR.
 HULL, MRS. LYTLE
 HULSE, CHARLES HENRY
 HUME, JOHN E. N.
 HUMPHREYS, MRS. GEORGE H., 2ND
 HUN, SAMUEL HAND
 HUNT, MRS. BARRON
 HUNT, MRS. JAMES R.
 HUNTER, MRS. MALCOLM DuBois
 HUNTINGTON, MRS. ARCHER M.
 HUNTINGTON, MISS ELIZABETH Q.
 HUNTINGTON, MRS. GEORGE H.
 HUPPMAN, LOUIS R.
 HUPPMAN, MRS. LOUIS R.
 HURDMAN, FREDERICK H.
 HURDMAN, GEORGE CHARLES
 HURLEY, JAMES S.
 HURST, MISS FANNIE
 HUTCHINS, AUGUSTUS S.
 HUTCHINS, MRS. WALDO, JR.
 HUTCHINSON, A. A.
 HUTCHINSON, MRS. EDNA G.
 HUYCK, ELTON PRYNE
 HYMAN, DR. A.
 IJAMS, MRS. J. HORTON
 INCERSOLL, MRS. R. V.
 IRELAND, RUFUS J.
 IRWIN, WILLIAM FLETCHER
 ISELIN, MISS GEORGINE
 ISELIN, MRS. LEWIS
 ISELIN, MISS LOUISE M.
 ISELIN, MRS. O'DONNELL
 ISELIN, WILLIAM O'D.
 ISLES, PHILIP
 ISRAEL, LEON, JR.
 ISREELI, JACK
 ITTLESON, HENRY, JR.
 IVIMEY, MRS. MEA A.
 JACKSON, MRS. F. W.
 JACKSON, FREDERICK W.
 JACKSON, JOHN G.
 JACOBI, LESTER E.

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JACOBS, EDWIN L.
 JACOBUS, DAVID D.
 JAEGER, THEODORE
 JAFFIN, DR. ABRAHAM E.
 JAFFRAY, MRS. ROBERT
 JAMES, MRS. BAYARD
 * JAMES, HENRY
 JAMES, MRS. HENRY
 JACQUES, FRANCIS L.
 JARCHO, DR. JULIUS
 JASON, HAROLD A.
 JAVITS, MRS. LILY B.
 JAY, JOHN C.
 JEFFE, GENERAL EPHRAIM F.
 JEFFERY, MRS. J. E.
 JEHL, DR. JOSEPH R.
 JENKINS, MRS. FARISH A.
 JENKS, MRS. ROBERT I.
 JENNINGS, MISS GLADYS F.
 JENNINGS, LAWRENCE K.
 JENNINGS, PERCY HALL
 JENSEN, MISS MARGARET IDA
 JESSUP, EVERETT C.
 JOHNSON, BENNETT A.
 JOHNSON, ERNEST C.
 JOHNSON, J. FORD
 JOHNSON, LARRY
 JOHNSON, MISS MILDRED L.
 JOHNSON, MRS. OSA
 JOHNSON, SYLVESTER
 JOHNSON, T. T.
 JOHNSON, MRS. WAYNE
 JOHNSTON, D. M. C., JR.
 JOHNSTON, SCOTT
 JOHNSTON, W. F.
 JONAS, JOHN
 JONAS, LOUIS PAUL
 JONAS, LOUIS PAUL, JR.
 JONES, MRS. CHARLES
 JONES, FRANK N.
 JONES, H. LeROY
 JONES, HENRY KIRKLAND
 JONES, MARVIN LEE
 JORDAN, THOMAS V.
 JOYCE, ADRIAN D.
 JUDSON, WILBER
 JUTA, JAN
 KAGAN, LEO B.
 KAGLE, SAMUEL
 KAHN, GILBERT SHERBURNE
 KAHN, LEON S.
 KAHN, MRS. OTTO H.

- KAHN, WALTER N.
 KAHRS, GEORGE E.
 KANE, CHARLES B.
 KANE, FREDERICK L.
 KANTER, HARRY
 KAPLAN, HENRY C.
 KARELSEN, EPH A.
 KARELSEN, FRANK E., JR.
 KASHINS, HERMAN
 KAY, MISS MARIE W.
 KAYE, SYDNEY M.
 KEAN, JOHN
 KEAN, MRS. JOHN
 KEAN, MISS MARY ALICE
 KEAN, ROBERT WINTHROP
 KEENA, MRS. ALLIS H.
 KEHOE, ARTHUR H.
 KEHOE, JOHN PAUL
 KEIL, HENRY F.
 KEISER, MRS. DAVID M.
 KELLER, CARL TILDEN
 KELLEY, NICHOLAS
 KELLEY, MRS. ROBERT W.
 KELLOGG, MRS. FREDERIC R.
 KELLY, MISS ADALINE B.
 KELLY, EDWARD J.
 KELLY, JOHN A.
 KELLY, MRS. RACHEL M. QUISTON
 KELLY, RICHARD
 KELLY, MRS. SHAUN, JR.
 KELLY, THOMAS SMITH
 KEMP, MISS ISABELLE
 KEMP, MISS MARION M.
 KENNEDY, DR. FOSTER
 KENNEDY, LAURENCE S.
 KENT, MRS. RICHARD PEABODY
 KENYON, LEE J.
 KEON, JOSEPH J.
 KERR, LEWIS S., JR.
 KERRIGAN, JAMES J.
 KESSLER, DR. BARNETT
 KETCHAM, E. C.
 KEUFFEL, MRS. W. G.
 KIDDER, H. MAYNARD
 KIENBUSCH, CARL O.
 KIENZEL, MRS. A. B.
 KILBOURNE, MISS BELLE SKINNER
 KING, FREDERICK P.
 KING, MRS. JOHNSON
 KING, MISS MINNIE P.
 KING, MRS. PAUL
 KINGSFORD, IRVING B.
 KINGSLEY, DARWIN P., JR.
 KINKEAD, MISS JENNIE H.
 KINNEY, MRS. WARREN
 KINSEY, HAROLD C.
 KIP, MRS. GARRETT B.
 KIRBY, L. LAWRENCE
 KIRK, MRS. CHARLES A.
 KIRKHAM, WILLIAM B.
 KIRKLAND, MRS. WILLIAM REED, JR.
 KIRKMAN, SIDNEY A.
 KISSEL, MRS. W. THORN
 KITTERIDGE, MISS CAROLA
 KLAUSER, MISS CORA
 KLAUSSMANN, ERIC K.
 KLEIN, D. EMIL
 KLEINFELD, MRS. GERTRUDE R.
 KLEITZ, WILLIAM L.
 KLIMERMAN, MRS. SOL
 KLINE, GARDINER
 °KLINGENSTEIN, MRS. CHARLES
 KLUGESCHIED, R. C.
 KNAPP, DR. ARNOLD
 KNIGHT, DR. AUGUSTUS S.
 KNIGHT, MRS. JOHN
 KNOBLOCH, HENRY F. J.
 KNOFF, SIDNEY H.
 KNOPF, MRS. S. ADOLPHUS
 KNOWLTON, EBEN B.
 KOBBE, MRS. GEORGE M. W.
 KOCH, EDWARD R.
 KOCHER, WALTER
 KOEHL, ALBERT
 KOENIG, MISS LUCY M.
 KOHNSTAMM, LOTHAIR S.
 KOLLSTEDE, CHARLES A.
 KOONTZ, MRS. CHESTER B.
 KORFF, MRS. SERGE A.
 KORN, HAROLD
 KOSBY, MISS RUTH
 KOSMAK, DR. GEORGE W.
 KRACH, CHARLES H.
 KRAMER, MRS. ARTHUR J.
 KRAMER, JULES
 KRECH, MRS. M. CHAPIN
 KRECH, MRS. SHEPARD
 KREZEK, K. M.
 KRUEGER, RICHARD G.
 KRUMB, HENRY
 KRUSE, RALPH H.
 KUHN, AUGUST
 KUNHARDT, MRS. HENRY R.
 KUNHARDT, MRS. PHILIP B.

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KURZMAN, CHARLES C.
 LaFLAMME, ELMER
 LAMB, MRS. WILLIAM F.
 LAMBERT, DR. ADRIAN V. S.
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 LAMONT, MRS. CORLISS
 LaMONTAGNE, MRS. HARRY
 LAMPE, ERNEST
 LANDEGGER, KARL F.
 LANE, A. D.
 LANE, MISS KATHARINE W.
 LANE, MRS. WILLIAM H.
 LANE, WOLCOTT G.
 LANGMANN, DR. ALFRED G.
 LANIER, STERLING E.
 LAPHAM, RAYMOND W.
 LARKIN, MRS. ADRIAN HOFFMAN
 LARKIN, MRS. JOHN A.
 LARSEN, CLARENCE J.
 LaRUE, R. B.
 LATTIN, C. PARKER
 LAUDER, EDWIN G., JR.
 LAUGHLIN, MRS. HOMER, JR.
 LAUGHLIN, THOMAS I.
 LAW, FREDERICK G.
 LAW, MISS PAULINE ELIZABETH
 LAWLESS, DAVID F.
 LAWRENCE, CHARLES C.
 LAWRENCE, MRS. JAMES F.
 LAWRENCE, THOMAS W.
 LAWRENCE, TOWNSEND
 LAWSON, MISS JEAN
 LAZRUS, S. RALPH
 LEA, MISS FANNY HEASLIP
 LEALE, LOYAL
 LEBAN, J. L.
 LEDYARD, MRS. ISABEL
 LEE, FREDERICK B.
 LEE, HORACE N.
 LEE, JAMES T.
 LEE, RICHARD D.
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 LEFFERTS, MRS. BARENT
 LEFFERTS, MRS. GILLET
 LEFFINGWELL, RUSSELL C.
 LEHMAN, HAROLD M.
 LEHMAN, MRS. HAROLD M.
 LEHMAN, MRS. HERBERT H.
 LEHMAN, MRS. ROBERT
 LEHRER, MISS ELIZABETH ANN
 LEIDESDORF, S. D.
 LENNOX, ROBERT W.
 LEO, JACK G.

LERCH, F. H., JR.
 LeROY, EDWARD A., JR.
 LeROY, MRS. ROBERT
 LESCAZE, MRS. WILLIAM
 LESLIE, MRS. JOHN C.
 LESTER, HENRY M.
 LESTER, HENRY M.
 LEU, LOUIS
 LEVEY, CHARLES BISPHAM
 LEVEY, MISS MARGARET BISPHAM
 LEVY, MRS. B. J.
 LEVY, WILLY
 LEWENTHAL, REEVES
 LEWINE, JEROME
 LEWIS, GEORGE A.
 LEWIS, J. SPEDAN
 LEWIS, MADISON H.
 LEWIS, MRS. ROBERT J.
 LEWISOHN, SAMUEL A.
 LEWONTIN, RICHARD
 LEY, MRS. HAROLD G.
 LEYENDECKER, RICHARD A.
 LICHTENSTEIN, OSCAR R.
 LIEB, DR. CHARLES C.
 LIEBMAN, LOUIS
 LIEDL, CHARLES
 LILIENTHAL, HOWARD L.
 LILIENTHAL, MRS. JOSEPH L.
 LINCOLN, MRS. FREDERIC W.
 LINDEBERG, H. T.
 LINDEMANN, ROLAND
 LINDER, HAROLD F.
 LINDEY, ALEXANDER
 LIPMAN, SAMUEL
 LIPMAN, WALTER L.
 LIPSETT, CHARLES H.
 LISSBERGER, EDMUND
 LITCHFIELD, E. HUBERT
 LITCHFIELD, LAWRENCE, II
 LITTLEJOHN, MRS. HUGH
 LITTWITZ, ALVIN W.
 LIVINGSTON, MISS ANGELICA
 LIVINGSTON, MISS ANNA P.
 LIVINGSTON, JOHN H.
 LOBEE, A. A.
 LOCKE, OTTO MARTIN
 LOCKETT, ARTHUR H.
 LOCKWOOD, LUKE B.
 LOCKWOOD, WILLIAM A.
 LOEB, GERALD M.
 LOEB, HOWARD A.
 LOENING, MRS. ALBERT P.
 LOGAN, MISS FLORENCE L.

LONG, JOHN E.
 LOOMIS, A. L., JR.
 LOOMIS, MRS. ALFRED LEE, JR.
 LOPEZ, F. A. DOMINGUES
 LOPEZ, J. E.
 LORD, MRS. FREDERICK W.
 LOUITTIT, MRS. WILLIAM E.
 LOVETT, MISS F.
 LOVETT, MRS. ROBERT A.
 LOW, MISS HARRIETTE
 LOW, MRS. MADELEINE M.
 LOWE, MRS. JOE
 LOWELL, MRS. FREDERICK E.
 LOWELL, JAMES B.
 LOWENSTEIN, LEO
 LOWMAN, LAWRENCE W.
 LUBER, HARRY I.
 LUDLUM, CLARENCE A.
 LUDWIG, JESSE J.
 LUEBBERMANN, COL. HENRI A.
 LUEDER, C. G.
 LUKE, ADAM K.
 LUNT, STORER
 LUSK, MRS. WILLIAM B., JR.
 LYNCH, WILLIAM
 LYON, A. E.
 LYON, MISS CLAUDIA
 LYON, MISS RUTH
 MAAS, MILTON A.
 MAASS, MRS. RICHARD
 MACHADO, JOSE A., JR.
 MACK, MRS. BERTHA
 MACK, MRS. EDWARD C.
 MACKAY, MRS. CLARENCE H.
 MACKAY, JOHN F.
 MAEDER, HOWARD P.
 MAEDER, MRS. JOHN S.
 MAGER, F. ROBERT
 MAGID, LEON
 MAGIE, JAMES MCCOSH
 MAJOR, HARLAN
 MALI, MRS. HENRY J.
 MALLINSON, H. R.
 MALONEY, RICHARD L., JR.
 MALTZ, B. M.
 MANEELY, EDWARD F.
 MANICE, MRS. WILLIAM DEF.
 MANN, ALAN N.
 MANN, MISS JESSIE
 MANNING, JAMES H.
 *MAPES, EUGENE E.
 MARCKWALD, ALBERT H.
 * Deceased
 MARCUS, ROBERT D.
 MARKS, ARTHUR W.
 MARKS, MISS BARBARA EDNA
 MARKS, CARL
 MARKS, HENRY C.
 MARKS, MRS. LAURENCE M.
 MARKWALTER, H. F.
 MARSH, ALONZO KIMBALL
 MARSH, NORMAN J.
 MARSHALL, CHARLES A.
 MARSHALL, CHARLES C.
 MARSHALL, MISS EDITH G.
 MARSHALL, WALTER P.
 MARSTERS, MRS. ARTHUR A.
 MARSTON, EDGAR J.
 MARSTON, HUNTER S.
 MARTENET, MRS. MAY DAVIS
 MARTIN, BRADFORD L.
 MARTIN, BRADLEY
 MARTIN, MISS ELIZABETH P.
 MARTIN, MRS. GRINNELL
 MARTIN, H. BRADLEY
 MARTIN, MRS. HARRY P.
 MARTIN, HERBERT
 MARTIN, MRS. SHELTON E.
 MARTIN, WILLIAM F.
 MARTINI, MRS. FRED
 MARVIN, LANGDON P.
 MARVIN, MRS. LANGDON P.
 MASIROFF, SOL
 MASON, CHARLES N.
 MASON, L. RANDOLPH
 MASSIE, EDWIN B.
 MASTERS, MRS. FRANCIS R.
 MASTIN, MISS MARY
 *MATTER, MILTON
 MATTHEWS, MRS. FLAGLER
 MATTHEWS, T. S.
 MATTHIESSEN, ERARD A.
 MATTILA, LAURI W.
 MAUDE, MRS. ERIC
 MAXWELL, C.
 MAXWELL, HOWARD W.
 MAXWELL, DR. JAMES D.
 MAY, MRS. CHARLES H.
 MAYER, JOHN
 MAYER, MRS. JOHN
 MAYER, MRS. JOHN A.
 MAYNARD, RICHARD S.
 MAYNARD, MRS. WALTER
 MAZZOCCO, DANTE V.
 McALPIN, MRS. ALLAN H., JR.

McALPIN, DAVID H., JR.
 McALPIN, EDWIN A., 3RD
 McALPIN, MRS. EDWIN A., 3RD
 McANENY, MRS. GEORGE
 McBRIDE, WILLIAM M.
 McCANCE, MRS. THOMAS
 McCANLISS, LEE
 McCANN, FRASIER W.
 McCANN, MRS. LAWRENCE G.
 McCARTER, G. W. C.
 MCCARTHY, JOHN
 McCLINTOCK, GILBERT S.
 McCLOY, MRS. JOHN J.
 McCLUNG, ROBERT M.
 McCLURE, H. ELLIOTT
 McCLURE, JAMES D.
 McCOMBS, DR. A. P.
 McCORMACK, MRS. ALFRED
 McCORMICK, MISS MILDRED
 McCREA, MRS. JAMES A.
 McCULLOH, J. S.
 McDERMOTT, JOHN P.
 McDONNELL, HUBERT
 McDUFFIE, DUNCAN
 McELROY, MRS. THORA RONALDS
 *McEWEN, PAUL
 McFADDEN, LOUIS E.
 McGEE, CLIFFORD W.
 McGIBBENNY, RALPH E.
 McGrATH, F. SIMS
 McGUCKIN, B. F.
 McILHENNY, EDWARD A.
 McINTOSH, ALLAN J.
 McIVER, GEORGE W., JR.
 McKEE, ROBERT E.
 *McKEEVER, E. G.
 McKELVEY, MRS. ROBERT
 McKENZIE, MRS. W. M.
 McKITTRICK, THOMAS H.
 McLANE, HUNTINGTON
 *McLANE, THOMAS S.
 McLANE, MRS. THOMAS S.
 McLAUGHLIN, JOHN R.
 McLEAN, MARSHALL
 McMANUS, JOHN
 McMILLAN, GEORGE S.
 McNABB, LISLE F.
 McNAIR, WILLIAM
 McNULTY, HAROLD C.
 McQUILLEN, PAUL W.
 McTARNAHAN, WILLIAM C.
 McVEIGH, CHARLES S.
 * Deceased

McVEIGH, MRS. CHARLES S.
 MEADE, GEORGE P.
 MEDICI, ANGELO, JR.
 MEEHAN, IRVING H.
 MEEK, MISS SUSAN
 MEGEAR, MRS. THOMAS J.
 MELLING-SCHUBERT, MRS. QUENTIN
 MELLON, CHARLES HENRY
 MELLON, MRS. CHARLES HENRY
 MELLON, MISS ELEANOR M.
 MELLON, WILLIAM LARIMER, 3RD
 MELNICK, STEVEN WILLIAM
 MELONI, ALDOUS
 MELVILLE, MISS RUTH
 MENARY, ROBERT V.
 MENDELSON, WALTER
 MENDELSON, HERBERT
 MENDLESON, ALAN N.
 MERLE-SMITH, F.
 MERRILL, CHARLES E.
 MERRILL, EDWIN G.
 MERRILL, F. HAMILTON, JR.
 MERRILL, OLIVER B., JR.
 MERRILL, MRS. PAULINE G. W.
 MERRITT, WALTER GORDON
 MERRITT, MRS. WALTER GORDON
 MERRITT, WALTER HENRY
 METCALF, MANTON B., JR.
 METCALF, PROF. Z. P.
 MEY, JOHN
 MEYER, ARTHUR S.
 MEYER, EUGENE
 MEYER, J. EDWARD
 MEYER, MAURICE, JR.
 MICHALIS, CLARENCE G.
 MIDINIAN, MRS. BETTY
 MIEBACH, HERBERT H.
 MILBANK, ROBERT W., JR.
 MILBURN, MRS. DEVEREUX
 MILES, RICHARD WAKEFIELD
 MILES, SANFORD
 MILLER, MISS BILLIE
 MILLER, C. BLACKBURN
 MILLER, MRS. G. MACCULLOCH
 MILLER, GEORGE C.
 MILLER, LAWRENCE MCK.
 MILLER, MRS. MARTHA H.
 MILLER, RICHARD D.
 MILLER, MISS ROSALIE
 MILLER, ROSWELL
 MILLER, MRS. ROSWELL
 MILLER, MRS. WILLIAM DAVIS

- MILLHISER, MRS. REGINA V. G.
 *MILLIKEN, GERRISH H.
 MILLS, R. C.
 MILMINE, MRS. CHARLES E.
 MILTON, DAVID M.
 MILTON, MRS. DAVID M.
 MINER, RANLET, JR.
 MINOR, MRS. CLARK H.
 MINSTER, WALLING
 MISCH, ROBERT J.
 MITCHELL, CORNELIUS VON E.
 MITCHELL, J. MURRAY
 MITCHELL, JAMES L.
 MITCHELL, MRS. S. ROGER
 MITCHELL, SIDNEY A.
 MODEL, MRS. JEAN
 MOESEL, GEORGE E.
 MOFFAT, DONALD
 *MOFFETT, MRS. FRANK W.
 MOGI, MRS. Y.
 MOHR, MORRIS
 MOHUN, C. PEABODY
 MOL, A. A.
 MOLLER, MISS JANE
 MONTAGUE, A.
 MONTGOMERY, MASTER PETER
 MOORE, MRS. BENJAMIN
 MOORE, MRS. CASIMIR DE R.
 MOORE, MRS. EDWARD S., JR.
 MOORE, MRS. EILEEN N.
 MOORE, MRS. FREDERICK L.
 MOORE, GEORGE G., JR.
 MOORE, MRS. LOUIS DEBEBIAN
 MOORE, PAUL, JR.
 MOOREHEAD, LUDWIG K.
 MORAN, DANIEL E.
 MORAN, EUGENE F.
 MORAN, EUGENE F., JR.
 MORAWETZ, MRS. VICTOR
 MOREHEAD, JOHN M.
 MORGAN, ALEXANDER P.
 MORGAN, MISS ANNE
 MORGAN, JUNIUS S.
 MORGAN, P. ANGUS
 MORGAN, WILLIAM FELLOWES, JR.
 MORLEY, MRS. FREDERICK H.
 MORRIS, MRS. DAVE H.
 MORRIS, REV. DR. DUBOIS S.
 MORRIS, MRS. ROBERT H.
 MORRISON, MRS. CHARLES KING
 MORRISON, DAVID C.
 MORRONE, MICHAEL FRANCIS
 *Deceased
 MORSE, WALLACE MURRAY
 *MORTIMER, STANLEY GRAFTON
 MOSES, L. GUSTAM
 MOSKOVICS, MRS. F. E.
 MOSLE, MRS. A. HENRY
 MOSLER, EDWIN H.
 MOSMAN, PHILIP A.
 MOULTON, FRANCIS S.
 MOYER, MISS ELEANOR E.
 MUDGE, MRS. ALFRED E.
 MUEHLENBRINK, OTTO W.
 MUEHLSTEIN, JULIUS
 MUELLER, MISS RUTH M.
 MUGGENTHALER, MRS. BERTINA
 MUHLETHALER, DR. PAUL
 MUHLFELD, FRANK J.
 MULLANEY, EUGENE L.
 MULLER, CARL L.
 MULLER, ROMEO E.
 MULLIGAN, MRS. THOMAS A.
 MUMA, JOHN
 MUMFORD, GEORGE S., JR.
 MUMFORD, PHILIP, II
 MUNGER, EDWARD A.
 MUNROE, PETER
 MUNROE, SYDNEY P.
 MURIN, THEODORE
 MURPHY, ADRIAN
 MURPHY, MRS. JOHN E. B.
 MURPHY, MISS MARTHA
 MURRAY, MRS. EDWARD E.
 MURRAY, W. J., JR.
 MUZELAK, PETER
 MYERS, MRS. CORNELL
 MYERSON, JOSEPH G.
 MYRIN, MRS. H. ALARIK W.
 NADIG, ALFRED
 NAEF, DR. PAUL A
 NAMM, MISS PEGGOTTY HANKS
 NARDIN, ANTHONY A.
 NAUGLE, JOHN JAY
 NAUMBURG, MRS. WALTER W.
 NAVIN, MRS. NONA
 NAYFACK, BERTRAM S.
 NEBOLSINE, MRS. GEORGE E.
 NEESER, MISS ELVINE L.
 NEIDERMAN, MISS BARBARA
 NELSON, W. D.
 NESMITH, COL. JAMES, 2ND
 NESTEL, WALTER
 NEUBERGER, ROY R.
 NEUMANN, MRS. THEODORE W., JR.

NEUMOEGER, MRS. M. L.
 NEUSS, MISS DOROTHY
 NEUSTADT, MRS. S.
 NEWBURGER, COM. MORTON J.
 NEWMAN, CARL E.
 NEWTON, ARTHUR L.
 NEWTON, F. MAURICE
 NEWTON, HOWARD
 NEWTON, MRS. R. C.
 NICHOLS, CLARENCE H.
 NICHOLS, MRS. FRANCIS T.
 NICHOLS, MRS. GEORGE
 NICHOLS, MRS. MORTON C.
 NICHOLSON, MRS. G. J. GUTHRIE
 NICKERSON, MAJOR HOFFMAN
 NICOL, ROBERT A., JR.
 NILES, MISS CHARLOTTE
 NITARDY, F. W.
 NOBLE, MRS. LAWRENCE
 NORMAN, MRS. BRADFORD
 NORMAN, BRADFORD, JR.
 NORMAN, WILFRED H., JR.
 NORTON, DR. WILLIAM S.
 NYDEN, ERNEST E.
 NYDEN, GUSTAF A.
 NYSELIUS, GUSTAV
 OAK, MISS DOROTHY
 OAKES, MRS. MALCOLM
 OAKLEY, MRS. R. LAWRENCE
 OASTLER, MRS. FRANK R.
 OBERFELDER, WALTER S.
 O'BRIEN, KENNETH
 O'BRIEN, MORGAN J., JR.
 OCHIS, MICHAEL
 O'CONNOR, MRS. JAMES W.
 O'CONNOR, JOHN J.
 O'CONNOR, ROBERT C.
 OELRICHS, MRS. HERMANN
 OENSLAGER, DONALD M
 OESTE, MISS MARION
 OESTREICHER, SYLVAN
 OFFERMAN, JOHN
 OGDEN, CHARLES W.
 OGDEN, MISS MARY F.
 OGILVIE, W. E.
 OGLEBAY, MISS KATE
 OHMIS, JOHN
 OHLANDT, B. C.
 OLD, PROF. MARCUS C.
 OLD, WILLIAM ERWOOD, JR.
 OLDS, MRS. ROBERT E.
 OLMSTED, MRS. CLARENCE E.

OLMSTED, MRS. HENRY C.
 OLMSTED, RICHARD DEW. B.
 OLMSTED, ROBERT G.
 OLSON, CLARENCE E.
 OPENHYM, GEORGE J.
 * OPPENHEIMER, DAVID E.
 ORBISON, DOUGLAS C.
 ORDWAY, SAMUEL H., JR.
 ORTH, CHARLES D.
 ORVIS, MRS. HARDIN
 OSBORN, A. PERRY
 OSBORN, EARL D.
 OSBORN, MRS. FREDERICK
 OSBORN, MRS. JOHN J.
 OSBORN, MRS. MARGARET
 OSBORN, MISS VIRGINIA
 OSBORNE, MRS. DEAN C.
 OSBORNE, MRS. HAROLD S.
 OSTERBYE, THEODORE J.
 OSTERTAG, MRS. EDNA M.
 OTHEMAN, ROSWELL C.
 OTTER, MISS MARY
 OTTINGER, LAWRENCE
 OTTO, ELMER C.
 OUTERBRIDGE, FRANK R.
 OUTWATER, JOHN O.
 OWEN, J. MCKEE
 PACKARD, ARTHUR W.
 PAEPER, HENRY
 PAGE, MISS IONE
 PAGE, NELSON L.
 PAGE, ROBERT G.
 PAGENSTECHE, MISS BERTHA
 PAINE, HUGH E.
 PAINE, PETER S.
 PAINE, RICHARD C.
 PALMER, LESLIE E.
 PALZER, NATHANIEL J.
 PARDEE, DR. IRVING H.
 PARISH, HENRY, 2ND
 PARK, MRS. H. HALSTED
 PARK, HAROLD HALSTED, JR.
 PARKER, DANIEL NEELY
 PARKER, MRS. KENNETH
 PARMALEE, MISS ELIZABETH
 PARSONNET, DR. A. E.
 PARSONS, MRS. EDGERTON
 PARSONS, DR. HERBERT
 PARSONS, MRS. J. GRAHAM
 PARSONS, MRS. J. LESTER, JR.
 PARSONS, MRS. JOSEPH
 PARSONS, MISS KATHARINE DE B.

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PARSONS, DR. WILLIAM BARCLAY
 PATHY, ALEXANDER F.
 PATON, DR. R. TOWNLEY
 PATTERSON, MRS. MOREHEAD
 PATTERSON, DR. RUSSEL H.
 PATTISON, MRS. ETHEL ELY
 PAUL-WILCOX, MISS IRIS J.
 PAYSON, MRS. CHARLES SHIPMAN
 PEABODY, MISS AMELIA
 PEARCE, MRS. ARTHUR W.
 PEARCE, HAROLD W.
 PECK, A. WELLS
 PECK, ARTHUR J.
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 PELL, MRS. WILLIAMSON, JR.
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 PERKINS, MRS. GEORGE W.
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 PICKMAN, DUDLEY L., JR.
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 PIERREPONT, R. STUYVESANT
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 PINGREE, SUMNER, JR.
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 PIOSELLI, MRS. ALICE B.
 PIPER, ALEXANDER R., JR.
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 PITHA, CARL A.
 PITMAN, MRS. LORRAINE F.
 PITMAN, THEODORE B.
 PIZZINI, A. J.
 PLATT, MRS. FRANK H.
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PLATT, FREDERICK PUTNAM
 PLATT, LIVINGSTON
 PLIMPTON, FRANCIS T. P.
 PLOHN, CHARLES
 PLUMMER, JOHN F.
 POLLARD, L. DOUGLAS
 POLOZIE, MICHAEL E.
 POLOZIE, MRS. MICHAEL E.
 POMEROY, DANIEL E.
 POMEROY, MASTER ROBERT W.
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 PONSONBY, MISS CAROLYN
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 PRICE, FREDERIC N.
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 PRIMOFF, EUGENE HENRY

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 RASMUS, WILLIAM T.
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 READ, DUNCAN H.
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 REID, W. R.
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 REISINGER, CURT H.
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 RENTSCHLER, GORDON S.
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 REYDEL, WILLIAM
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 ROSENSTEIN, DAVID
 ROSENSTEIN, HENRY
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 SCHILDWACHTER, ALBERT G.
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 SCHLESINGER, ROBERT
 SCHLEY, MRS. KENNETH B.
 SCHLEY, REEVE
 SCHLICHT, WILLIAM
 SCHMIDHAUSER, HAROLD B.
 SCHMITZ, MASTER JAY A.
 SCHNEIDER, FRANZ
 SCHNEIDER, WALTER G.
 SCHNEIERSON, SAMUEL S.
 SCHOENHEIMER, PIERRE L.
 SCHOLLE, HARDINGE
 SCHOLLE, WILLIAM D.
 SCHONBRUNN, S. A.
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 SCHWARTZ, MARVIN
 SCHWARZ, MISS EMILY E.
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 SCHWARZ, HERBERT F.
 SCOFIELD, ROBERT R.

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 SCOTT, WILLIAM R.
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 SCRIBNER, MASTER CHARLES T.
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 SELBY, MRS. JOHN C.
 SELIG, SAMSON
 SELIGMAN, MRS. GEORGE W.
 SELIGMAN, LEO
 SELIGMAN, MRS. LEO
 SELIGMAN, WALTER
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 SERVENTI, CHARLES
 SESKIS, I. J.
 SEXTON, MRS. ERIC H. L.
 SEXTON, MRS. R. W.
 SEYMOUR, EDMUND
 SHAFFER, E. E. D.
 SHAFFER, MRS. FLORENCE C.
 SHAILER, FRANK A.
 SHAMES, JOSEPH
 SHANAHAN, T. J.
 SHANLEY, BERNARD M., 3RD
 SHANNON, GEORGE C.
 SHANOK, MRS. BEATRICE
 SHAPIRO, MOSES
 SHARP, DR. L. I.
 SHARP, MRS. L. I.
 SHATTUCK, MRS. EDWIN P.
 SHAW, EARLE T., JR.
 SHAW, JAMES M.
 SHEARER, MRS. GEORGE L.
 SHEFFIELD, HALSEY F., JR.
 SHEFFIELD, MRS. JAMES R.
 SHEFFIELD, WILLIAM, 3RD
 SHELDON, MISS HARRIETTE C.
 SHELDON, JAMES
 SHELDON, MRS. MAGDA M.
 SHELLEY, MISS MONA
 SHEPARD, MISS DOROTHY
 SHERER, DUNHAM B.
 SHERMAN, EDWIN F.
 SHERMAN, MRS. LOUISE
 SHIELDS, JAMES E.

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SHIFFMAN, DR. HARRY
 SHILLING, HOWARD W.
 SHIPMAN, RICHARD DELAFIELD
 SHREWSBURY, JERRY
 SICKELS, W. E.
 SIEBERN, HENRY W.
 SIEDENBURG, MRS. REINHARD
 SIERMAN, MISS MARION G.
 SIEVERMAN, FRANK A.
 SILLECK, HENRY G., JR.
 SIMMONS, CHARLES HERBERT, III
 SIMON, DR. JOHN L.
 SIMON, MRS. ROBERT E.
 SIMPSON, JOHN L.
 SINCLAIR, MRS. JENNIE H.
 SINGER, HERBERT M.
 SINGER, NORRIS
 SINGER, MRS. NORRIS
 SINNIGEN, MRS. WALTER C.
 SKEEL, MRS. ROSWELL, JR.
 SKELDON, FRANK L.
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 SLEEPER, WILLIAM A.
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 SLOAN, MRS. SAMUEL
 *SLOANE, MRS. JOHN
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 SMITH, MRS. HERMON DUNLAP
 SMITH, HOWARD CASWELL
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 SMITH, MAXIM
 SMITH, COL. R. H.
 SMITH, MRS. RUTH FERRIS
 SMITH, SHERWIN DOUGLAS
 SMITH, MRS. SHERWIN DOUGLAS
 SMITH, THEODORE B.
 SMITH, THOMAS L.
 SMITH, WARREN S.
 SMITHERS, C. FRANCIS
 SMULL, MRS. J. BARSTOW
 * Deceased

SMYTH, DAVID W.
 SMYTH, HERBERT C., JR.
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 SOBEL, GERSON
 SODER, MRS. KADE
 SODERBERG, GUSTAVE J., JR.
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 SPALDING, H. BOARDMAN
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 SPENCER, DUNCAN M.
 SPEYERS, JULIAN R.
 SPICHLER, LEO
 *SPITZNER, GEORGE W.
 SPOONER, RAY NEWHALL
 SPURR, JOSEPH JAMES, 2ND
 STAATS, ROBERT R.
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 STACK, JAMES A.
 STAFFORD, WALTER N.
 STAGG, FREDERICK L.
 STANTON, MRS. ESTELLE
 STAMM, LOUIS S.
 STANLEY, ALFRED
 STANLEY, HAROLD
 STANLEY, ROBERT C.
 STANLEY, MRS. ROBERT C.
 STANLEY, SAMUEL F.
 STANLEY-BROWN, DR. MARGARET
 STANWICK, CHARLES A.
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 *STAPLES, JOHN N.
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 STEENWEG, ROBERT JAMES
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 STEIN, DR. KENNETH E.
 STEIN, M.
 STEINBECK, JOHN
 STEINER, E. W.
 STEINHARDT, FREDERICK J.

STEINHARDT, SAMUEL C.
 STEINHARDT, WILLIAM B.
 STEINWAY, MRS. THEODORE E.
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 STERN, EDWARD N.
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 STERN, MICHAEL P.
 STERZELBACH, HERBERT
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 STEWART, MRS. WILLIAM RHINELANDER
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 STOUT, GARDNER DOMINICK
 STOUTENBURGH, JOHN L., JR.
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 STRAUB, B.
 STRAUB, MRS. B.
 STRAUB, PAUL A.
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 TEW, JAMES DINSMORE, 2ND
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 TROLANO, FRANK E.
 TROSTER, MRS. OLIVER J.
 TRUMBULL, WALTER
 TRUSLOW, FRANCIS A., JR.
 TUCKER, CARLL
 TUCKER, MRS. CARLL
 TUCKER, MRS. CARLL, JR.
 TUCKER, MRS. JOHN
 TUCKERMAN, MRS. ARTHUR
 TULLY, MISS ALICE B.
 TUNICK, WALTER B.
 TUNNEY, MRS. GENE
 TURNBULL, MRS. RAMSEY
 TURNER, MRS. HUNTINGTON
 TURNER, JOHN B.
 TURNER, DR. KENNETH B.
 TURNER, LEWIS
 TUTTLE, CARLISLE B.
 TWEED, HARRISON
 TYLER, MRS. VICTOR MORRIS
 TYRREL, RANDOLPH E.
 ULLMAN, MASTER ANDREW

UPHAM, MRS. JOHN P.
 VALENSTEIN, MRS. LINDA S.
 VALENTI, JOSEPH
 VALENTINE, MISS MARGUERITE
 VAN ALLEN, JAMES H.
 VAN ALLEN, MRS. JAMES H.
 VAN ALSTYNE, DAVID J., JR.
 VANBUREN, RALPH
 VANDERBILT, WILLIAM H.
 VANDERLIPP, W. T.
 VAN DUSEN, MRS. SAMUEL C.
 VANGELDER, RICHARD GEORGE
 VANGERBIG, BAREND
 VAN HEUKELOM, CAREL W.
 VANINGEN, DR. PHILIP
 VANKIRK, MRS. FLORENCE M. P.
 °VAN NORDEN, MISS HELEN
 VAN NORDEN, MRS. MARGERY L.
 VAN NORDHEIM, JACK H.
 VANVALEY, DR. EDWIN G.
 VANVLECK, HOWARD A.
 VAUGHAN, MRS. HENRY GOODWIN
 VEATCH, MRS. CAROLINE E.
 VICARIO, J. MERRITT
 VIETH, RICHARD N.
 VIETOR, MISS DIANA
 VISHNIAC, ROMAN
 VOGEL, MASTER WILLIAM MILES
 VOGELEY, MRS. W. ROEBLING
 VOLK, KURT H.
 VOLKMANN, MISS RUTH
 VON AU, MRS. OTTO E.
 VONBERGEN, WILLIAM H.
 VONNAGY, MISS AMELIE
 VONSTADE, MRS. F. SKIDDY
 VON VIETINGHOFF, DR. KARL
 VOORHEES, MRS. S. F.
 VOTA, DOMENICK A.
 VRETTA, CARL
 VUILLIEUMIER, DR. J. A.
 WACKER, MRS. ARTHUR A.
 WADDELL, CHAUNCEY L.
 WADRO, DR. HAROLD S.
 WADSWORTH, LESLIE H.
 WADSWORTH, MRS. SEYMOUR
 WAGNER, OSCAR
 WAGSTAFF, MRS. DAVID
 WAGSTAFF, MRS. FROTHINGHAM
 WAINWRIGHT, DANIEL P.
 WALDES, MILO
 WALKER, BRADFORD H.
 WALKER, MISS ELIZABETH
 ° Deceased

WALKER, MISS MIRIAM DWIGHT
 WALKER, MRS. SAMUEL P.
 WALKINSHAW, DR. LAWRENCE H.
 WALLACE, DICKSON
 WALLIS, DR. ROBERT
 WALLS, MRS. ELIZABETH
 WALMSLEY, HERU RA
 WALSH, MISS HANNAH B.
 WALSH, JAMES A.
 WALTER, MISS B. VIOLET
 WALTON, HAROLD L.
 WALTON, RUDOLPH L.
 WALTZ, ANTON F.
 WANER, MRS. ANNA N.
 WANG, STEPHEN
 WARBURG, DAVID
 WARBURG, MRS. FELIX M.
 WARBURG, GERALD F.
 WARBURG, MRS. PHYLLIS
 WARD, E. S.
 WARD, SYLVANUS D.
 WARD, DR. WILBUR
 WARD, WILLIAM F.
 WARDWELL, MISS ALICE W.
 WARDWELL, ALLEN
 WARDWELL, MRS. EDWARD R.
 WARFIELD, ETHELBERT
 WARMACK, MRS. ROBERT N.
 WARNER, ALBERT
 WARNER, MRS. DONALD J.
 WARNSHUIS, MRS. A. L.
 WATERBURY, MISS FLORANCE
 WATERMAN, PHILIP M.
 WATERS, MRS. F. S.
 WATJEN, MRS. LOUIS F., JR.
 WATSON, THOMAS J.
 WATTS, EDWARD E., JR.
 WAYNE, HAROLD L.
 WEAVER, LEWIS E.
 WEAVER, MRS. MARGARET E.
 WEAVER, WARREN
 WEBB, SAMUEL B.
 WEBB, VANDERBILT
 WEBB, MRS. VANDERBILT
 WEBER, JULIUS
 WEBSTER, DR. JEROME P.
 WEED, J. SPENCER
 WEEKES, ARTHUR D.
 WEEMS, F. C.
 WEIGERT, HUGO
 WEIL, FRANK L.
 WEIL, MRS. FRANK L.

WEIL, DR. HENRY L.
 WEIL, MRS. SYLVAN E.
 WEIL, WALTER L.
 WEILBACHER, MRS. ESTELLE
 WEINBERG, MRS. CHARLES
 WEINKAUF, MRS. H.
 WEINSTOCK, DR. HARRY
 WEISL, EDWIN L.
 WEISMAN, DR. ABNER I.
 WEISMANN, HAROLD A.
 WEISSMAN, WILLIAM KENT
 WELCH, E. SOHIER
 WELCH, FRANCIS C.
 WELCH, HENRY K. W.
 WELD, MRS. EDWARD M.
 WELD, MRS. PHILIP B.
 WELLDON, SAMUEL A.
 WELLS, MRS. FAY GILLIS
 WELLS, LINTON
 WELTZIEN, MRS. HENRY C.
 WENDELL, ARTHUR R.
 WETMORE, MISS EDITH
 WEVER, GEORGE D.
 WHEELER, MRS. JOHN M.
 WHEELER, MRS. JOHN P.
 WHEELLOCK, WARREN
 WHITAKER, GEORGE W.
 WHITE, MISS GERTRUDE R.
 WHITE, HAROLD T.
 WHITE, HAROLD T., JR.
 WHITE, RICHARDSON, JR.
 WHITE, DR. THOMAS J.
 WHITEHOUSE, SHELDON
 WHITEHOUSE, WILLIAM F.
 *WHITIN, MISS LOUISE
 WHITMAN, BRET HARTE, JR.
 WHITMAN, MISS TANIA
 WHITMAN, WILLIAM, JR.
 WHITNEY, EDWARD A., JR.
 WHITNEY, MRS. GEORGE
 WHITNEY, MRS. HOWARD F., SR.
 WHITRIDGE, ARNOLD
 WHITTLESEY, MELZAR M.
 WICK, JOHN M.
 WIEDEL, MRS. PHILIP D.
 WIEHE, THEODORE C.
 WIESE, MRS. CAROLINE V. DER W.
 WILCOX, DR. DANIEL A.
 WILDER, MRS. THROOP M.
 WILE, EDWIN
 WILKINSON, DR. JOSEPH B.
 WILKINSON, MRS. LAURENCE
 * Deceased

WILLARD, J. T.
 WILLETTS, WILLIAM P.
 WILLETTS, MRS. WILLIAM P.
 WILLEY, PROF. CHARLES H., PH.D.
 WILLIAMS, DR. BYARD
 WILLIAMS, MRS. CLARK
 WILLIAMS, ERNEST
 WILLIAMS, MRS. JAMES D.
 WILLIAMS, MISS JANE E.
 WILLIAMS, JOHN S.
 WILLIAMS, PROF. JOSEPH L.
 *WILLIAMS, MRS. PERCY H.
 WILLIAMS, SAMUEL D.
 WILLIAMS, DR. WALTER J.
 WILLIAMS, WHEELER
 WILLIAMS, MRS. WILLIAM D.
 WILLIAMSON, CLIFTON P.
 WILLIAMSON, MRS. E. M.
 *WILLIS, BEN
 WILMERDING, JOHN C., JR.
 WILMERDING, MRS. LUCIUS
 WILNER, ELLIS H.
 WILSON, HORACE H.
 WILSON, MISS ISABEL
 WILSON, KENT H.
 WILSON, ORME
 WILSON, MRS. PAUL E.
 WILSON, R. THORNTON
 WINDISCH, RICHARD P.
 WINKHAUS, MRS. JOHN T.
 WINSER, MISS BEATRICE
 WINSLOW, PEARSON
 WINSTON, OWEN
 WINTHROP, ROBERT
 WOCOL, FRANK E., JR.
 WOLF, SAMUEL
 WOLFE, ALAN L.
 WOLFE, ARTHUR
 WOLFE, HENDERSON M.
 WOLFE, J. ALBERT
 WOLFF, MRS. BERTRAM
 WOLFF, HENRY J.
 WOLFF, JOHN L.
 WOLFSON, GEORGE M.
 WOLMAN, MRS. LEO
 WOLTER, MRS. WILLIAM R.
 WOOD, CORNELIUS AYER
 WOOD, ERIC W.
 WOOD, ERNEST N.
 WOOD, F. G., JR.
 WOOD, MRS. H. DUNCAN
 WOOD, MRS. TURNBULL

WOOD, MRS. WILLIS D.
WOODRUFF, MISS HELEN M.
WOODWARD, CEDRIC R.
WOODWARD, ERNEST L.
WOODWARD, MRS. JULIAN L.
WOODWARD, MRS. WILLIAM
WOODY, TATE
WOOLLEY, JOHN E.
WOOLLEY, MRS. JOHN E.
WOOLLEY, KNIGHT
WOOLLEY, MRS. KNIGHT
° WOOLLEY, MRS. PARK M.
WOOLVERTON, SAMUEL
WORCESTER, WILFRED J.
WORFOLK, E. L.
WORMSER, FELIX E.
WORMSER, MRS. MAX E.
WORTIS, DR. BERNARD S.
WRIGHT, HARRISON
WRIGHT, JOHN S.
WRIGHT, SOLOMAN, JR.
WRIGHT, MRS. W. L.
° Deceased

WULFING, F. W.
WURM, DR. CARL, JR.
WYETH, MARION SIMS
YANCEY, REV. P. H., S.J.
YARROW, MRS. WILLIAM
YLLA
YOUNG, MAHONRI M.
YOUNG, ROLAND KEITH
YOUNKER, HERMAN
ZABRISKIE, CHRISTIAN A.
ZABRISKIE, MISS ETHEL
ZABRISKIE, GEORGE A.
ZACHRY, STEPHEN
ZAHN, PHILIP
ZEPP, DR. C. P.
ZIEGLER, WILLIAM, JR.
ZINSSER, AUGUST
ZINSSER, RUDOLPH
ZINSSER, WILLIAM H.
ZIPSER, SAMUEL S.
ZIVE, SIMON
ZURMUHLEN, FREDERICK H.

SUMMARY OF MEMBERSHIP

Benefactors	6
Founders in Perpetuity.....	12
Founders	13
Associate Founders	10
Patrons	37
Life Members	370
Annual Members	3,094
Honorary Members	3
Fellows	91
Research Associates	3
Corresponding Members	12
(Total).....	3,651

Corrected to January 1, 1948

BY-LAWS OF THE NEW YORK ZOOLOGICAL SOCIETY

ARTICLE I • MEMBERS

SECTION 1. The present members and such others as hereafter shall become members in accordance with these by-laws shall be the members of this Society.

SEC. 2. Annual, contributing and school members shall be elected by the Board or Executive Committee and, upon election, shall qualify for such membership by payment of dues for the first year commencing on the date of their election. No organizations other than schools shall be eligible as such for Society membership.

SEC. 3. Annual dues of annual members shall be \$10, and of contributing and school members \$25. Any person who shall fail to qualify within three months after his election shall be deemed to have declined his election.

SEC. 4. Any member who shall fail to pay his annual dues within three months after notice that they have become due and demand therefor, shall cease to be a member of the Society. He may, however, be reinstated by the Board or Executive Committee for good cause shown.

SEC. 5. Any person who shall have donated to the Society, in the aggregate, cash or the equivalent in value of any of the following amounts shall be eligible for election, by the Board or Executive Committee, to the class of membership appearing opposite such amount:

\$ 200.00	Life Membership	\$ 5,000.00	Founder
\$1,000.00	Patron	\$10,000.00	Founder in Perpetuity
\$2,500.00	Associate Founder	\$25,000.00	Benefactor

An annual member who has paid dues for five consecutive years and a contributing or school member who has paid dues for three consecutive years, may thereafter, at any time, upon payment of the difference between the aggregate dues already paid and \$200, but in no case less than \$100, be elected a Life Member. Upon the death of a trustee, his widow shall be eligible for election, by the Board or Executive Committee, to Life Membership.

SEC. 6. The Board or Executive Committee may elect to membership in the following classes persons who, in their judgment, have achieved the qualifications hereinafter specified:

Fellows:—Persons of marked scientific achievement.

Honorary Members:—Persons who have rendered distinguished services in the science of zoology or natural history.

Corresponding Members:—Persons who have rendered marked services to the Society through correspondence.

SEC. 7. All but annual, contributing and school members shall be exempt from payment of annual dues.

SEC. 8. Benefactors and Founders in Perpetuity shall have the power to designate their respective successors, who shall thereupon be entitled to all the rights and privileges of their predecessors, including the right in turn to desig-

nate their successors. Such designation shall be in writing indorsed or attached to the certificate of membership or by last will and testament.

ARTICLE II • PRIVILEGES OF MEMBERS

SECTION 1. Each annual, contributing and school member shall be entitled to a member's ticket, ten tickets of admission to the Zoological Park and Aquarium on pay days, a copy of the annual report, a copy of the official periodical publication of the Society, and shall be entitled also to the privileges of the Library and Administration Building at the Zoological Park.

SEC. 2. Life Members shall be entitled to all the privileges of annual members and also to ten additional tickets of admission to the Zoological Park and Aquarium on pay days.

SEC. 3. Benefactors, Founders in Perpetuity, Founders, Associate Founders and Patrons shall be entitled to all the privileges of Life Members and also to receive the Society's scientific publication "Zoologica."

SEC. 4. A member's ticket, issued annually, shall admit the member and his immediate family to the Zoological Park and Aquarium on pay days and to lectures and special exhibitions. It may be used by the member's immediate family.

SEC. 5. Each member, other than a member elected pursuant to Article I, Section 6, shall be entitled to one vote at each meeting of the Society.

SEC. 6. Any member who shall fail to comply with the provisions of these by-laws may be suspended from the privileges of membership or dropped from the rolls of the Society, by a majority vote of those present at a duly constituted meeting of the Board or Executive Committee.

ARTICLE III • MEETINGS OF THE SOCIETY

SECTION 1. The Annual Meeting of the Society shall be held on the second Tuesday in January in each year, or on such day thereafter and at such time and place as may be designated by the Board or Executive Committee.

SEC. 2. Special Meetings of the Society may be called upon order of the President or Chairman of the Executive Committee or on the written request of ten Trustees delivered to the Secretary.

SEC. 3. Notice of each annual or special meeting of the Society, stating the time, place and purpose thereof, shall be mailed, at least ten days before an annual and three days before a special meeting, to each member at his address last recorded with the Secretary.

SEC. 4. At all meetings of the Society twenty members shall constitute a quorum.

ARTICLE IV • BOARD OF TRUSTEES

SECTION 1. The property, affairs and business of the Society shall be managed and controlled by a Board of Trustees consisting of thirty-six members

divided into three equal classes, together with the Mayor and the Commissioner of Parks of the City of New York who shall be members *ex officio* of the Board. Each class of elected trustees shall hold office for three years and until its successors are elected. The term of office of one class shall expire each year and its successor shall be elected at the annual meeting of the Society.

SEC. 2. No person shall be eligible for election to the Board unless he shall be either a Benefactor, Founder in Perpetuity, Founder, Associate Founder, Patron or Life Member and, excepting to fill vacancies, unless his name shall have been posted as a candidate by the Nominating Committee or by not less than ten members in writing in a conspicuous place in the office of the Society not less than ten days before the annual meeting.

SEC. 3. Vacancies in the Board may be filled for the unexpired term by the Board or Executive Committee at any regular or special meeting, by ballot, by a majority vote of the members present; but no person shall be eligible for election to fill a vacancy unless he shall have been nominated at a prior or special meeting of the Board or Executive Committee.

SEC. 4. The Board shall hold an annual meeting in December in each year, on a date and at a time and place designated by the Board or Executive Committee. Other meetings of the Board may be called upon order of the President or Chairman of the Executive Committee or at the written request of five Trustees delivered to the Secretary. Twelve Trustees shall constitute a quorum.

SEC. 5. Notice of each meeting of the Board shall be mailed to each Trustee at least seven days before the annual meeting and at least three days before any other meeting.

SEC. 6. A Trustee who shall fail to attend three consecutive meetings of the Board, without being excused by the Board, shall be deemed to have resigned as a Trustee.

SEC. 7. The Board at its annual meeting in each year shall appoint four standing committees—an Executive Committee, a Finance Committee, an Auditing Committee and a Conservation Committee — each of which shall serve for one year, or until its successors are appointed. The Board or Executive Committee may appoint such other Committees and delegate to them such powers as they may deem advisable or necessary. The President shall designate the Chairman of each committee.

ARTICLE V • OFFICERS

SECTION 1. The Board of Trustees at its Annual Meeting in each year shall elect a President, a First Vice President, a Second Vice President, a Treasurer and a Secretary from among the Trustees. The said officers shall hold office respectively for the ensuing year and until their successors are elected. Any vacancy for an unexpired term may be filled by the Board or Executive Committee.

SEC. 2. The President shall preside at all meetings of the Society and of the Board, exercise general supervision of the affairs of the Society, from time to time call attention of the Board to such subjects as in his opinion require consideration and shall exercise the usual functions pertaining to his office. He shall be a member *ex officio* of all standing committees.

SEC. 3. The Vice Presidents, in order of seniority, in case of death, absence, resignation or disability of the President shall perform his duties and exercise his powers.

SEC. 4. The Treasurer shall collect, receive and have custody of the funds and securities of the Society subject to the order of the Board or Executive Committee and shall keep all funds of the Society on deposit with a bank or trust company approved by the Board or Executive Committee. He shall pay all bills and appropriations as ordered by the Board or Executive Committee, shall keep regular and correct accounts and shall submit reports to the Society at its Annual Meeting, to the Board at all Regular Meetings and to the Executive Committee at each meeting. He shall be a member *ex officio* of the Executive Committee. The books of account of the Society shall be open at all times to the inspection of the Trustees and the Executive, Finance and Auditing Committees. The fiscal year of the Society shall be the calendar year.

SEC. 5. The Secretary, unless otherwise ordered by the Board or Executive Committee, shall cause notices to be issued of all meetings of the Society, the Board and the Executive Committee, attend all such meetings and keep the minutes thereof. Together with the President or a Vice President he shall execute all contracts and instruments on behalf of the Society, and shall affix the seal of the Society when authorized to do so by the Board or Executive Committee. He shall conduct the correspondence of the Society, have custody of the seal, archives and books, other than books of account, and perform the usual duties pertaining to his office and such other duties as the Board or Executive Committee may direct. He shall be a member *ex officio* of the Executive Committee.

SEC. 6. The Board or Executive Committee may appoint an Assistant Treasurer or an Assistant Secretary and such other officers or officials as may be deemed necessary to serve at the pleasure of the Board or Executive Committee, and may define their respective duties. A bank or trust company organized under the laws of New York and having its principal place of business in New York City may be appointed Assistant Treasurer and may be made depository of the funds and custodian of the securities and investments of the Society upon such terms and with such powers as may be delegated to it by the Board or Executive Committee.

ARTICLE VI • COMMITTEES

SECTION 1. *Executive Committee* — This Committee shall consist of eight Trustees, together with the President, Treasurer and Secretary as members *ex officio*. Vacancies shall be filled by the Board or by the Committee itself.

In the interim between meetings of the Board, the Executive Committee shall manage and control the property, business and affairs of the Society and exercise all the powers of the Board to the extent not delegated to other Committees or contrary to law. It shall report at each regular meeting of the Board.

Regular meetings of the Executive Committee shall be held on the third Tuesday in each month, unless otherwise ordered by the Chairman, at such time and place as shall be fixed by the Chairman. Special meetings may be called upon order of the Chairman or at the written request of three members of the Committee delivered to the Secretary. Four members including the Chairman shall constitute a quorum.

The Executive Committee shall appoint each year a Nominating Committee which shall hold office for one year and until its successors are appointed.

The Executive Committee shall have power to fix the salaries of the officers and employees of the Society.

SEC. 2. Finance Committee — This Committee shall consist of not less than three Trustees and the Treasurer as members *ex officio*. Vacancies therein shall be filled by the Board or Executive Committee.

The Finance Committee shall have power to sell securities and other investments belonging to the Society and to reinvest proceeds of sale and invest any other funds of the Society available for investment, in such securities or investments as it may deem wise. It shall report quarterly to the Executive Committee all purchases and sales of securities and investments made by it. It may submit to the Board or Executive Committee its recommendations with regard to sales or purchases of securities or other investments.

Notwithstanding the power hereby conferred, the Board or Executive Committee may, at any time, direct the sale of any securities and investments held by the Society, or direct the reinvestment of any proceeds of sale or investment of other funds of the Society available for investment in such securities or investments as it may specify.

All transfers and assignments of the securities registered or standing in the name of the Society shall be executed under the seal of the Society by the President or a Vice President, together with the Secretary or Treasurer.

The report of the Chairman of the Finance Committee shall be sufficient authority to the Chairman of the Executive Committee for approving drafts for purchases of securities or investments.

SEC. 3. Auditing Committee — This Committee shall consist of three members, other than members elected pursuant to Article I, Section 6, together with the President and the Secretary as members *ex officio*. Vacancies therein shall be filled by the Board or Executive Committee.

The Auditing Committee shall cause the accounts of the Treasurer and any other accounts of the Society to be audited and certified annually, or as often as it deems advisable, by a certified public accountant of its selection and shall report to the Board at its annual meeting. It shall cause the annual statement of the Treasurer to be audited and certified by such certified public accountant before it is submitted to the Board, and shall annually, or as often as it deems advisable, examine and verify the securities and other investments belonging to the Society.

SEC. 4. Conservation Committee — This Committee shall consist of three or more Trustees, together with the President as member *ex officio*. It shall have charge of the wild life conservation activities of the Society and the disbursement of such funds as shall be appropriated to its use by the Board or Executive Committee. Vacancies therein shall be filled by the Board or Executive Committee.

SEC. 5. Nominating Committee — This Committee shall be composed of three members other than Trustees and members elected pursuant to Article I, Section 6. Vacancies therein shall be filled by the Executive Committee. This Committee shall select twelve candidates, to succeed the outgoing class of Trustees, to be voted upon at the ensuing annual meeting. Such candidates shall be selected from among the Benefactors, Founders in Perpetuity, Founders, Associate Founders, Patrons and Life Members of the Society. The names of

such candidates shall be posted in a conspicuous place in the office of the Society at least ten days before the annual meeting.

ARTICLE VII • AMENDMENTS

SECTION 1. These By-Laws may be amended, either by change or repeal of any provision or the adoption of new provisions, at any meeting of the Board by majority vote of the Trustees present, provided such proposed amendment is set forth in full in the notice of such meeting.



